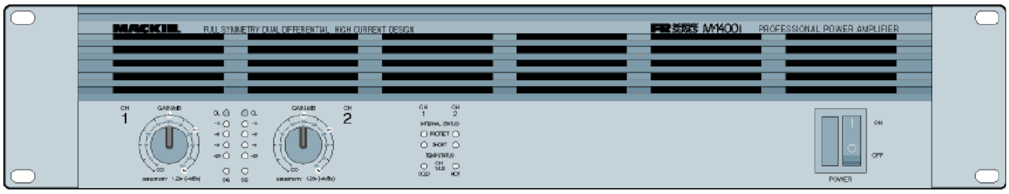
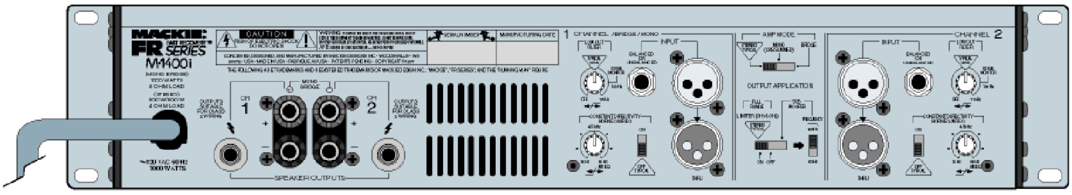
MACKIE®

M1400, M1400i

FR series amplifiers (series II)


MACKIE
FULL SYMMETRY DUAL DIFFERENTIAL HIGH CURRENT DESIGN
FR SERIES M1400i
PROFESSIONAL POWER AMPLIFIER
CH 1
GAIN (dB)
CH 2
INTERNAL STATUS
PROTECT
SHORT
TEMP STATUS
ON
OFF
POWER


MACKIE
FR SERIES
M1400i
CAUTION
CH 1
MONO BRIDGE
CH 2
SPEAKER OUTPUTS
CHANNEL 1 / BRIDGE / MONO
INPUT
THRU
AMP MODE
OUTPUT APPLICATION
CHANNEL 2
INPUT
THRU

SERVICE MANUAL

MACKIE M1400/M1400i series II SERVICE MANUAL

SERVICE ON THIS EQUIPMENT IS TO BE PERFORMED BY
EXPERIENCED REPAIR TECHNICIANS ONLY
CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE

CAUTION *AVIS*

RISK OF ELECTRIC SHOCK
DO NOT OPEN
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE THE COVER (OR BACK)
NO USER SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE.

AVIS:POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE.

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UN PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS LAISSER AUCUNE PARTIE A DECOUVERT.

This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION :Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio energy and, if not installed properly and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'éléctrocution.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

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Display board 254-1
Soft Start board 162-1
Main Assembly Drawings Assembly-1
Amplifier Sub-assembly Drawings Sub-1

INTRODUCTION

- **What's all this "series II" stuff anyway**?

The designation "series II" is an internal Mackie way of describing the new M1400 and M1400i amplifiers built after June 1999. You will not see "series II" written on any of the advertising, boxes or silkscreens. One clue is that the series II amps do not have handles.

The serial number prefix also indicates if the amplifier is a series I or II:
The M1400 Series I serial numbers start with a prefix "AH," (use the other M1400 service manual)
The M1400 Series II serial numbers start with a prefix "DB" (use this manual)
M1400i Series I serial number prefix is "AM" (use the other M1400 service manual)
M1400i Series II serial number prefix is "DA" (use this manual)

SERVICE ON THIS EQUIPMENT IS TO BE PERFORMED BY
EXPERIENCED REPAIR TECHNICIANS ONLY
CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE

This manual contains basic service information. It is essential that you have a copy of the user's manual as this contains the complete operating instructions.

SERVICE TECHNICAL ASSISTANCE

Mackie Designs, Service Technical Assistance, is available 8AM - 5PM PST, Monday through Friday for Authorized Mackie Service Centers, at 1-800-258-6883. Feel free to call with any questions and speak with a carefully-calibrated technician. If one is not available, leave a detailed message and a qualified Mackoid will return your call asap.

DISCLAIMER

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Overview

M1400 and M1400i power amps built after June 15, 1999 have some rather lovely improvements. These include:

1. **Higher output fan for increased cooling** – The old fan which has an output of 51 CFM has been replaced with a new hi-performance Panasonic FBA0824H1T fan that has 62 CFM output. This improves the M1400/1400i's cooling capacity by 20%, allowing them to run in an environment 14°F hotter than previously without overheating.
2. **Higher voltage tolerance** – the four main filter capacitors have been increased in voltage rating from 80V to 82V. This improves the ability of the M1400/1400i to handle installations and gigs where the AC line voltage is higher than normal.
3. **Improved speaker protection circuitry** – Previously, under certain unusual conditions, (such as the SeaHawks winning an away game), the protection circuits could shut down the amplifier. The circuit is redesigned so instead of shutting down, the amplifier will mute for two seconds and then begin operation again.
4. **Other improvements**– The new designs have improved reliability by changing the design surrounding the driver transistors, specifying higher quality main 30A bridges, removing all soldered-in multi-pin cable assemblies in favor of more reliable (and more expensive) header to receptacle interconnections, increasing the robustness of the +/-16V power supplies, and redesigning the baker clamp for improved high power operation.
5. **New circuit boards**– The new designs have new circuit boards.
6. **Handles Removed**– The new designs have no handles on the front panel. This is also a quick way of telling if the amplifier is a series II design or not.
7. **Service Manual**– The old service manual contains many details which still apply, such as circuit theory and troubleshooting. This series II manual is just a basic guide to the new schematics, pcbs, assembly drawings and parts lists.
8. **Owner's Manual**– The owner's manual was only mildly altered to reflect the new model, so all details of the amplifier's operation are correct.
9. **Service bulletin**– The ribbon modification still applies to the "series II" models. See the last page of this service manual.

Safety test

You must perform the following leakage test before returning the unit to your customer. Take every safety precaution to protect yourself while doing this test.

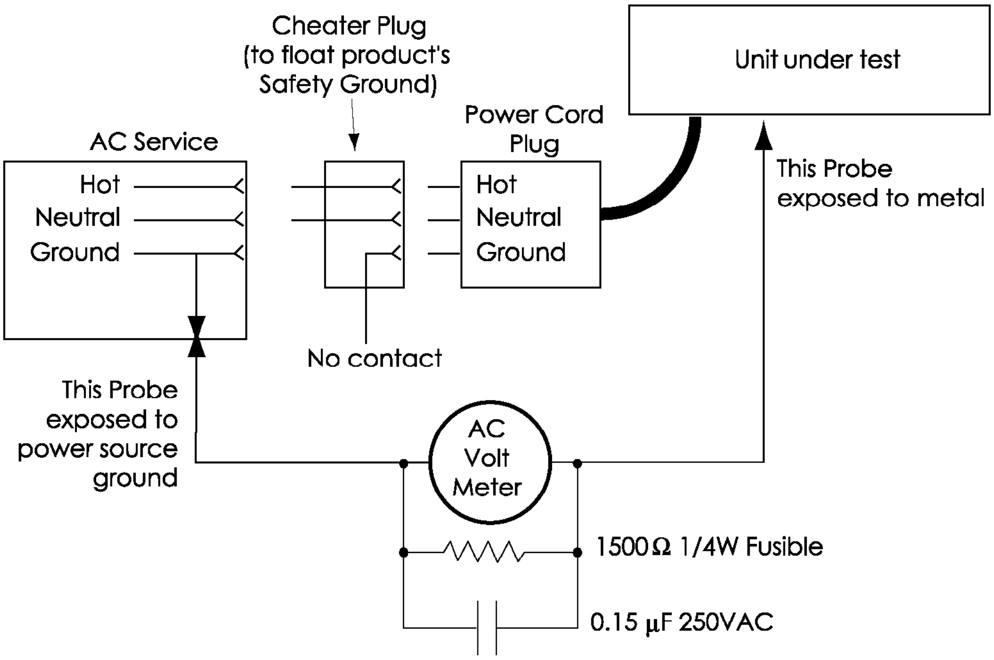
1. Make a small loading RC circuit as shown in the diagram below, and connect the AC volt meter between the AC power source ground and any exposed metal on the unit under test.

2. Connect the unit under test to an AC power source using a ground-lift adaptor, leaving the unit's safety ground floating. Turn the unit on.

3. The meter reading should be less than 750mVAC (note: this is equivalent to 0.5mA of leakage current).

4. Flip the plug over in the receptical so the hot and neutral are swapped.
   Verify that the reading is still less then 750mVAC.

5. If either reading is greater than 750mVAC, then you must investigate and repair the unit before returning it to your customer.


Cheater Plug
(to float product's
Safety Ground)
Unit under test
Power Cord
Plug
AC Service
Hot
Neutral
Ground
Hot
Neutral
Ground
This Probe
exposed to metal
No contact
This Probe
exposed to
power source
ground
AC
Volt
Meter
1500Ω 1/4W Fusible
0.15 µF 250VAC

PARTS LIST

Parts Numbering guide

040-	Cables
055-	Finished PCB Assy
100-	Pots and resistors
200-	Capacitors
300-	Semiconductors
400-	Jacks/Connectors
500-	Switches
510-	Fuses
550-	Chassis Metalwork
600-	Transformers
601-	Inductors
610-	Wires and Cables
640-	AC line cords
700-	Hardware
760-	Knobs/Plastic
770-	Fans
790-	Misc./Packing
800-	Printed Material
860-	EPROM

PART#	DESCRIPTION	PAGES
090-137-XX	M1400 assembly	A-2
080-149-00	Heatsink subassembly	A-3
090-134-00	M1400i assembly	A-4
080-143-00	Heatsink subassembly	A-5
055-253-00	Input board	A-6
055-254-00	Display board	A-7
055-255-00	Amplifier board	A-8
055-162-00	Soft Start board	A-11

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Master Parts List 090-137-XX M1400 series II

Part #	Description	Rev	Qty	
090-137-00	M1400 SERIES II 120V	A6 A2	1	
090-137-01	M1400 SERIES II 230V	A6 A2	1	
090-137-02	M1400 SERIES II 100V	A6 A2	1	
⚠ 040-359-00	RIB 28GA 20C 4.25IN PLZD	C	1	
⚠ 040-360-00	RIB 28GA 20C 18IN PLZD	C	1	
⚠ 055-162-01	PCB ASSY SOFT START 240V	A1	1	FOR 240VAC VERSION. SEE PAGE 11
⚠ 055-162-02	PCB ASSY SOFT START 100V	A1	1	FOR 100VAC VERSION. SEE PAGE 11
⚠ 055-253-00-01	PCB ASSY INPUT	A2 A2	1	SEE PAGE 6
⚠ 055-254-00-01	PCB ASSY DISPLAY	A2 A2	1	SEE PAGE 7
⚠ 080-035-00	PWR SW HARNESS - AMP	A	1	
⚠ 080-149-00	SA HTSK M1400 SERIES II	A6 A2	1	
⚠ 080-154-00	SA XFMR 120V 1400/1400 I	A1 A1	1	FOR 120VACVERSION
⚠ 080-154-01	SA XFMR 230V 1400/1400 I	A1 A1	1	FOR 230VACVERSION
⚠ 080-154-02	SA XFMR 100V 1400/1400 I	A1 A1	1	FOR 100VACVERSION
⚠ 500-022-00	SWITCH, ROCKER ILLUMINATED	A	1	
⚠ 510-017-00	FUSE SB 20A 3AB 1/4X1-1/4	A	1	FOR 120VAC AND 100VAC VERSIONS
⚠ 510-023-00	FUSE SB 8A 3AB 1/4X1-1/4	A	1	FOR 230VACVERSION
550-247-00	SHIELD INPUT - M1200	A	1	
550-249-00	PLATE XFMR .335IDX4.528OD	A	AR	
550-294-00	BRACKET FOR SOFT START	A	1	FOR 230VAC AND 100VAC VERSIONS
550-470-00	PNT CHASSIS M1400-PRO	A	1	
550-564-00	PNT TOP COVER M1400-I-PRO	A	1	
550-566-00	PNT SIDE RIGHT M1400-I-PR	A	1	
550-568-00	PNT LEFT SIDE M1400-I-PRO	A	1	
551-029-10	EXTR SCRN DSPLY BZL-M1400	D	1	
⚠ 640-006-00	LC 15A 125V SJT 14GA 6FT7	D	1	LINECORD FOR 120VACVERSION
⚠ 640-007-02	LC EXPORT - JAPANESE	D	1	LINECORD FOR 100VACVERSION
⚠ 640-007-01	LC EXPORT - EUROPEAN	D	1	LINECORD FOR 230VACVERSION
700-011-00	MCH 4-40X1/4 BTNSKT BLKOX	A	6	
700-028-01	SEMS 6-32X5/16 PHP BLKZC	B	36	
700-041-04	MCH 6-32X3/8 FL 100DG BLK	A	8	
700-050-04	MCH 6-32X3/8 FIL PHL CLR	A	2	
700-085-03	SCR PHP M3X6 STL BLK ZC	A	4	
700-086-00	TF 6-32X3/8 FL 100DG BLK	A	3	
700-106-00	BOLT HEX 5/16X23/4 ZC GD5	A	1	
701-016-00	5-20X5/16 PHPII TYP B BLK	A	8	
701-022-01	#4X5/16 PHP II TYP B BLK	B	4	
705-001-00	KEPNUT 6-32	A	2	
705-019-00	NUT STOVER LOCK 5/16X18	A	1	
710-002-00	WASHER-SPLD W/400-214-00	A	AR	
710-024-00	WASH FLAT 5/16 HARD (USS)	A	2	
730-016-00	LOCTITE 242	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
740-001-00	TYRAP 3-1/4L	A	2	
740-003-00	TYRAP 8IN BLK	A	2	
740-004-00	STRAIN RELIEF HEYCO 1244	A	1	
760-048-04	KNOB 9MM DARK GRAY	B	4	
760-061-00	KNOB VOLUME AMPS	A	2	
780-042-00	INSUL MYLAR INPUT SHIELD	A	1	
780-111-00	WASH RUB (W/TRANSFORMER)	A	2	
790-002-00	BAG POLY 12 X 18 2MIL	A	1	
790-022-00	POLY-SHEET 52CF X 26 4MIL	A	1	
800-160-00	BOX M1400 SER II	A	1	
800-161-00	M1400 BOX SLEEVE SER II	A	1	
810-056-00	INST TOP/BOTTOM - AMP		2	
820-062-11	OWN MNL M1400	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Heatsink sub assy 080-149-00

	Part #	Description	Rev	Qty	
	080-149-00	SA HTSK M1400 SERIES II	A6 A2	1	
	040-209-00	RIB 28GA 10C 11.5 PLZD	C	1	
⚠	055-255-01-01	PCB ASSY MAIN M1400	A6 A2	1	SEE PAGE 8. THIS HAS SPEAKON OUTPUTS
⚠	220-059-00	LYT 12000UF 20% 82V 35X60	A	4	NOTE THAT THIS IS 12,000 UF
	400-083-00	2P .100X1 22GA END	B	1	
⚠	410-003-00	INSL SILPAD K6 W/ADHESIVE	A	8.2	
⚠	410-006-00	INSL SILPAD W/O ADHESIVE	B	1	
	550-237-00	SPRING CLIP SUBSINK-M1200	A	2	
	550-255-00	PIGGYBACK CLIP	A1	1	
	550-467-00	BRKT SUBSINK M1400 PRO	A	2	
	550-468-00	COWLING HTSINK M1400 PRO	A	1	
	550-469-00	BRKT FAN M1400 PRO	A	1	
	551-085-00	EXTR FAB HEATSINK M1400PR	A	1	
	700-010-00	TF 6-32X1/4 PHP BLKZC	A	3	
	700-010-04	TF 6-32X3/8 PHP BLKZC	A	8	
	700-028-02	SEMS 6-32X3/8 PHP BLKZC	B	10	
	700-087-00	TF 4-40X5/8 TORX 1/4 WASH	A	5	
	700-088-00	TF 4-40X5/8 TORX 3/8 WASH	A	18	
	700-122-00	SS-8-32X1/4 PHP PH BLK OX		4	
	705-024-00	NUT 8-32 SMALL DIA	A	4	
	710-013-00	WASH FLAT NO.6 FIBRE	A	4	
	730-001-00	THERMAL JOINT COMPOUND	A	AR	
	730-003-00	ADHESIVE INDSTRL 3M 4799	A	AR	
	730-025-00	LOCTITE 222	A	AR	
	730-026-00	ADHESIVE RTV162	A	AR	
⚠	770-007-00	FAN 80MM 24VDC-PANASONIC	B	1	
	780-136-00	FOAM INSL FAN M1400 II	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Master Parts List 090-134-00 M1400i series II, 120v

Part #	Description	Rev	Qty	
090-134-00	M1400-I SERIES II 120V	A6 A2	1	
⚠ 040-359-00	RIB 28GA 20C 4.25IN PLZD	C	1	
⚠ 040-360-00	RIB 28GA 20C 18IN PLZD	C	1	
⚠ 055-253-00-01	PCB ASSY INPUT	A2 A2	1	SEE PAGE 6
⚠ 055-254-00-01	PCB ASSY DISPLAY	A2 A2	1	SEE PAGE 7
⚠ 080-035-00	PWR SW HARNESS	A	1	
⚠ 080-143-00	SA HTSK M1400-I SERIES II	A6 A2	1	SEE PAGE 5
⚠ 080-154-00	SA XFMR 120V 1400/1400 I	A1 A1	1	
⚠ 500-022-00	SWITCH, ROCKER ILLUMINATED	A	1	
⚠ 510-017-00	FUSE SB 20A 3AB 1/4X1-1/4	A	1	
550-247-00	SHIELD INPUT - M1200	A	1	
550-249-00	PLATE XFMR .335IDX4.528OD	A	AR	
550-564-00	PNT TOP COVER M1400-I-PRO	A	1	
550-565-00	PNT CHASSIS M1400-I-PRO	A	1	
550-566-00	PNT SIDE RIGHT M1400-I-PR	A	1	
550-568-00	PNT LEFT SIDE M1400-I-PRO	A	1	
551-029-20	EXTR SCRN DSPL BZL M1400I	D	1	
⚠ 640-006-00	LC 15A 125V SJT 14GA 6FT7	D	1	LINECORD
700-011-00	MCH 4-40X1/4 BTNSKT BLKOX	A	6	
700-028-01	SEMS 6-32X5/16 PHP BLKZC	B	36	
700-041-04	MCH 6-32X3/8 FL 100DG BLK	A	7	
700-050-04	MCH 6-32X3/8 FIL PHL CLR	A	2	
700-085-03	SCR PHP M3X6 STL BLK ZC	A	4	
700-086-00	TF 6-32X3/8 FL 100DG BLK	A	3	
700-106-00	BOLT HEX 5/16X23/4 ZC GD5	A	1	
701-016-00	5-20X5/16 PHPII TYP B BLK	A	8	
705-001-00	KEPNUT 6-32	A	2	
705-003-00	NUT HEX-SPLD W/400-214-00	A	AR	
705-015-00	NUT SLOT NCKL	A	2	
705-019-00	NUT STOVER LOCK 5/16X18	A	1	
710-002-00	WASHER-SPLD W/400-214-00	A	AR	
710-019-00	WASH FIBRE BLK	A	2	
710-024-00	WASH FLAT 5/16 HARD (USS)	A	2	
730-016-00	LOCTITE 242	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
740-001-00	TYRAP 3-1/4L	A	2	
740-003-00	TYRAP 8IN BLK	A	2	
740-004-00	STRAIN RELIEF HEYCO 1244	A	1	
750-001-00	BUMPON ROUND BLK .63X.31	A	4	
760-048-04	KNOB 9MM DARK GRAY	B	4	
760-061-00	KNOB VOLUME AMPS	A	2	
780-042-00	INSUL MYLAR INPUT SHIELD	A	1	
780-111-00	WASH RUB (W/TRANSFORMER)	A	2	
790-002-00	BAG POLY 12 X 18 2MIL	A	1	
790-022-00	POLY-SHEET 52CF X 26 4MIL	A	1	
800-158-00	BOX M1400-I SERIES II	A	1	
800-159-00	M1400I BOX SLEEVE SER II	A	1	
810-056-00	INST TOP/BOTTOM - AMP		2	
820-062-14	OWN MANUAL M1400I ENGDOM	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Heatsink sub assy 080-143-00

Part #	Description	Rev	Qty	
080-143-00	SA HTSK M1400-I SERIES II	A6 A2	1	
040-209-00	RIB 28GA 10C 11.5 PLZD	C	1	
⚠ 055-255-02-01	PCB ASSY MAIN M1400-I	A6 A2	1	SEE PAGE 8. THIS HAS 1/4" OUTPUTS
⚠ 220-058-00	LYT 10000UF 20% 82V 35X60	A	4	NOTE THAT THIS IS 10,000 UF
400-083-00	2P .100X1 22GA END	B	1	
⚠ 410-003-00	INSL SILPAD K6 W/ADHESIVE	A	8.2	
⚠ 410-006-00	INSL SILPAD W/O ADHESIVE	B	1	
550-237-00	SPRING CLIP SUBSINK-M1200	A	2	
550-255-00	PIGGYBACK CLIP	A1	1	
550-467-00	BRKT SUBSINK M1400 PRO	A	2	
550-468-00	COWLING HTSINK M1400 PRO	A	1	
550-469-00	BRKT FAN M1400 PRO	A	1	
551-085-00	EXTR FAB HEATSINK M1400PR	A	1	
700-010-00	TF 6-32X1/4 PHP BLKZC	A	3	
700-010-04	TF 6-32X3/8 PHP BLKZC	A	8	
700-028-02	SEMS 6-32X3/8 PHP BLKZC	B	10	
700-087-00	TF 4-40X5/8 TORX 1/4 WASH	A	5	
700-088-00	TF 4-40X5/8 TORX 3/8 WASH	A	18	
700-122-00	SS-8-32X1/4 PHP PH BLK OX		4	
705-024-00	NUT 8-32 SMALL DIA	A	4	
710-013-00	WASH FLAT NO.6 FIBRE	A	4	
730-001-00	THERMAL JOINT COMPOUND	A	AR	
730-003-00	ADHESIVE INDSTRL 3M 4799	A	AR	
730-025-00	LOCTITE 222	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
⚠ 770-007-00	FAN 80MM 24VDC-PANASONIC	B	1	
780-136-00	FOAM INSL FAN M1400 II	A	1	

253a

055-253-00 Rev A Input board

Part #	Description	Value		Reference
040-136-00	DIS 18GA 1007 BLK 5 QDTRM			J10
130-037-02	RESISTOR POT 9MM HORIZ	10K C		R22 R33
130-062-02	POT 50KC 12MM DUAL WO SLV	50KC		R13 R24
140-025-00	RESISTOR CF	10	5%	R54
140-078-00	RES TF SM .1W 5% 1K6 OHM	1K6	5%	R19-20 R30-31
140-082-00	RES TF SM .1W 5% 2K4 OHM	2K4	5%	R18 R29
140-087-00	RESISTOR CF	3K9	5%	R38
140-089-00	RESISTOR CF	4K7	5%	R21 R32 R35-37 R46-47
140-095-00	RES TF SM .1W 5% 8K2 OHM	8K2	5%	R17 R28
140-108-00	RESISTOR CF	27K	5%	R45
140-115-00	RESISTOR CF	51K	5%	R41 R43-44
140-123-00	RESISTOR CF	100K	5%	R39-40
140-147-00	RESISTOR CF	1M	5%	R23 R34
145-318-00	RES MF SM .1W 1% 2K00 OHM	2K00	1%	R1-2 R7-8 R42
145-389-00	RESISTOR MF	10K0	1%	R3-4 R9-10
145-397-00	RESISTOR MF	12K1	1%	R5-6 R11-12
200-001-02	CAPACITOR MYLAR T&R	0.012		C25 C28
200-004-02	CAPACITOR MYLAR T&R	0.047	10%	C24 C27
200-015-02	CAPACITOR MYLAR T&R	0.0047		C13 C16
200-022-02	CAPACITOR MYLAR TAPE	0.47	10%	C23 C26
200-025-02	CAPACITOR MYLAR T&R	0.56		C11-12 C14-15
212-001-00	CAPACITOR CERAMIC SMT	0.01	10%	C17-20 C29-32
212-004-00	CAPACITOR CERAMIC SMT	220PF	5%	C1-3 C6-8 C21-22
212-009-00	CAPACITOR CERAMIC SMT	47PF	5%	C4-5 C9-10
220-001-02	LYT 22UF 20% 25V RAD TR	22UF	10%	C33-34 C39-40
300-003-00	DIODE SIGNAL SMD	DL4148		D1-8
320-012-00	OPAMP NJM4560M	NJM4560M		U1-4
400-041-00	XLR VERT MALE PCMNT			J2 J5
400-214-00	JACK 1/4 V PCMNT 1MM WASH			J3 J6
400-223-00	XLR PCMNT NEUTRIK-AP SER FEMALE			J1 J4
400-341-20	HDR 20P .10X2 STR LCK			J11 J16
450-253-00	PCB INPUT M-1400-S2			Z3
500-023-00	SWITCH	4P3T		SW3 SW5
500-024-00	SWITCH SLIDE VERT PC MTG	DPDT		SW1-2 SW4

⚠ Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.

055-254-00 Rev A Display board

Part #	Description	Value		Reference
130-070-00	POT RTY 5K LIN 9MM 21DET	5KB	20%	R2 R32
140-057-00	RESISTOR CF	220	5%	R11
140-068-00	RES TF SM .1W 5% 620 OHM	620	5%	R9 R20
140-073-00	RES TF SM .1W 5% 1K0 OHM	1K0	5%	R33 R38
140-076-00	RESISTOR CF	1K3	5%	R25 R45-48 R50-52 R54
140-081-00	RESISTOR CF	2K2	5%	R1 R31
140-083-00	RES TF SM .1W 5% 2K7 OHM	2K7	5%	R10 R16-19 R49 R53
140-087-00	RESISTOR CF	3K9	5%	R14
140-092-00	RESISTOR CF	6K2	5%	R13
140-094-00	RESISTOR CF	7K5	5%	R15
140-097-00	RESISTOR CF	10K	5%	R29 R43-44
140-106-00	RESISTOR CF	24K	5%	R8 R28
140-111-00	RESISTOR CF	36K	5%	R41-42
140-124-00	RESISTOR CF	120K	5%	R12
140-139-00	RESISTOR CF	470K	5%	R4 R7 R27 R30
145-406-00	RESISTOR MF	15K0	1%	R5 R22 R24
145-469-00	RESISTOR MF	68K1	1%	R6 R23
145-478-00	RESISTOR MF	84K5	1%	R21
145-485-00	RESISTOR MF	100K	1%	R3 R26 R35 R37 R39-40
145-547-00	RESISTOR MF	442K	1%	R34 R36
212-001-00	CAPACITOR CERAMIC SMT	0.01	10%	C4-6 C10-11 C13 C19-20 C22-23
212-010-00	CAPACITOR CERAMIC SMT	.1UF	-400	C7-9 C12 C14-16 C24-25
220-002-02	CAPACITOR LYTIC RADIAL TAPE	47UF	10%	C3 C17
220-008-02	LYT 1UF 20% 50V RAD TR	1UF	10%	C18 C21
220-027-02	CAPACITOR LYTIC RADIAL	10UF	10%	C1-2
300-003-00	DIODE SIGNAL SMD	DL4148		D13-17 D21-23 D27
⚠ 304-070-02	LED RED T1 W/.550 SPCR T/	R RED		D1 D7 D18-19 D24-26
⚠ 304-071-02	LED GRN T1 W/.550 SPCR T/	R GRN		D2-6 D8-12 D20
311-002-00	X-SISTOR PNP SMD	IMBT4403		Q1-2
320-012-00	OPAMP NJM4560M	NJM4560M		U1 U6
323-002-00	I.C. QUAD COMPARATOR SMD	LM339		U2-5 U7
400-077-00	HDR 20P .1X2 STR LCK SHRD			J1
450-254-00	PCB, DISPLAY, M1400 S2			Z10
706-033-08	STDF SWAGE NO.4 X .665			M1-6

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

255a

MACKIE. M1400, M1400i series II

055-255-xx Rev A Amplifier board

Part #	Description	Value		Reference
040-135-00	CABLE ASSY, 18AWG, GN/YW, 4"			J38
100-001-00	RESISTOR CF	10	5%	R57 R72 R75 R89
100-017-00	RESISTOR CF	47	5%	R60 R69 R78 R86 R208 R213
100-023-00	RESISTOR CF	82	5%	R58 R61 R67 R70 R76 R79 R84 R87
100-027-00	RESISTOR CF	120	5%	R113
100-030-00	RESISTOR CF	160	5%	R97-100 R122 R134-136
100-031-00	RESISTOR CF	180	5%	R106 R116 R124 R132
100-040-00	RES CF .125W 5% 430 OHM	430	5%	R28 R37 R65 R83 R187
100-042-00	RES CF .125W 5% 510 OHM	510	5%	R23 R29 R33 R36 R229
100-049-00	RES CF .125W 5% 1K OHM	1K	5%	R209 R212
100-050-00	RESISTOR CF	1K1	5%	R143
100-051-00	RES CF .125W 5% 1K2 OHM	1.2K	5%	R64 R82
100-056-00	RESISTOR CF	2K	5%	R146 R157 R168 R171 R180
100-061-00	RESISTOR CF	3K3	5%	R142 R193-194 R214-215
100-071-00	RESISTOR CF	8K2	5%	R144
100-072-00	RESISTOR CF	9.1K	5%	R158
100-073-00	RESISTOR CF	10K	5%	R26 R30 R32 R35 R114 R127 R147-148 R155 R163-164 R167 R173 R176 R184 R190 R211 R220 R222-223 R227 R230-233
100-076-00	RES CF .125W 5% 13K OHM	13K	5%	R221
100-080-00	RESISTOR CF	20K	5%	R110 R152 R160 R169-170 R235
100-082-00	RESISTOR CF	24K	5%	R156
100-083-00	RESISTOR CF	27K	5%	R181
100-084-00	RESISTOR CF	30K	5%	R63 R66 R81 R90
100-086-00	RESISTOR CF	36K	5%	R112 R145 R159 R178 R197-198 R226
100-089-00	RES CF .125W 5% 47K OHM	47K	5%	R3-4 R31 R34 R108
100-092-00	RESISTOR CF	62K	5%	R139 R199-200 R203
100-093-00	RESISTOR CF	68K	5%	R140
100-094-00	RESISTOR CF	75K	5%	R234
100-097-00	RESISTOR CF	100K	5%	R111 R151 R153 R161-162 R172 R174-175 R183 R185-186 R210
100-109-00	RESISTOR CF	1M	5%	R109
100-110-00	RESISTOR CF	360K	5%	R195-196 R228
100-111-00	RESISTOR CF	390K	5%	R141
105-277-00	RESISTOR MF	750	1%	R120 R129
105-331-00	RESISTOR MF	2K49	1%	R56 R59 R62 R68 R71 R74 R77 R80 R85 R88 R105 R107 R115 R117 R119 R123 R125 R128 R131 R133 R154 R165-166 R177
110-065-00	RES CF .25W 5% 4K7 OHM	4K7	5%	R216-219
115-427-00	RESISTOR CF	24K9	1%	R118 R121 R126 R130
121-097-00	RESISTOR MOF	10K	5%	R225
123-009-00	RESISTOR MOF	0.22	5%	R38-49 R51-54
123-033-00	RESISTOR MOF	2.2	5%	R101-104 R137-138
123-056-00	RESISTOR MOF	20	5%	R149-150
123-071-00	RESISTOR MOF	82	5%	R207
123-109-00	RESISTOR MOF	3.3K	5%	R206 R224
130-038-00	RESISTOR POT TRIM HORIZ	500-B		R24 R27
⚠ 150-009-00	RESISTOR, FUSABLE, 1/4W	2.2	5%	R1-2 R5-7 R9-12 R14-18 R20-22 R50 R92 R94
⚠ 150-025-00	RES FUS .25W 5% 10 OHM	10	5%	R204-205
⚠ 150-037-00	RESISTOR, FUSABLE, 1/4W	33	5%	R13 R25 R55 R73 R91 R93 R95-96
⚠ 150-045-00	RESISTOR, FUSABLE, 1/4W	68	5%	R8 R19
⚠ 150-066-00	RESISTOR, FUSABLE, 1/4W	510	5%	R179 R182 R188-189
⚠ 150-080-00	RESISTOR, FUSABLE, 1/4W	2K	5%	R191-192 R201-202
200-007-02	CAPACITOR MYLAR T&R	0.01		C1-2 C29-30 C66 C73

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Part #	Description	Value	Reference
200-023-00	CAPACITOR, POLY BOX	1000pF 20%	C77 C84
200-024-00	CAPACITOR, POLY BOX	.01uF 20%	C49 C53-54
200-036-00	CAPACITOR, METALIZED POLY	.1uF 10%	C19 C26-28
200-044-02	PLY FILM 270PF 5% 630V TR	270pF 5%	C21-23 C25
210-001-02	CAPACITOR CERAMIC TAPE	0.01 10%	C8-9 C15-17 C24 C51-52 C56-63
210-010-02	CAPACITOR, CERAMIC, T/R	47pF 5%/NPO	C37 C40
210-017-02	CAPACITOR, CERAMIC, T/R	470pF 5%/Y5E	C32 C34 C36 C38-39 C41
211-003-00	CAPACITOR CERAMIC AXIAL	0.001 10%	C6 C10 C18 C20
211-009-00	CAPACITOR CERAMIC AXIAL	0.1 10%	C3-4 C48 C64 C71-72 C75 C81-82
220-002-02	CAPACITOR LYTIC RADIAL TAPE	47UF 10%	C74
220-004-02	CAPACITOR LYTIC RADIAL TAPE	470UF 10%	C42-43
220-011-02	CAPACITOR LYTIC RADIAL T&R	100UF 10%	C83
220-016-00	LYT 1000UF 20% 25V RAD	1000UF 10%	C11 C14
220-025-00	CAPACITOR LYTIC RADIAL	1,000UF 10%	C76
220-027-02	CAPACITOR LYTIC RADIAL TAPE	10UF 10%	C5 C7 C31 C33 C35 C44 C47 C50 C55 C65 C67-70
220-034-00	CAPACITOR LYTIC RADIAL	0.47UF 20%	C79
220-049-02	LYT 100UF 10V 20% RAD BIP	100uF 20%	C78 C80
300-001-00	DIODE SIGNAL	1N4148	D3-12 D16-17 D21-23 D25 D27-29 D32 D39-58 D61-69 D74-84 D87 D90 D92-93 D98-99
300-007-00	DIODE SIGNAL, 220V, LOW CAPACITANCE	1SS244	D24 D30-31 D33 D37-38 D59-60 D70-73 D85-86 D89
301-007-00	DIODE, POWER, DUAL, COMMON CATHODE	SF304 200V	D1
301-008-00	DIODE, POWER, DUAL, COMMON ANODE	SF304A 200V	D2
301-009-00	DIODE POWER	1N4004	D19-20 D26 D34-36 D95-96
301-010-00	DIODE POWER	1N5404	D13-15 D18
⚠ 301-017-00	THY MBS4992	MBS4992	Q93 Q95
⚠ 301-026-00	TRIAC 200V 40A	MAC224A4	Q83 Q88
302-003-00	DIODE ZENER	1N4745	D88 D91 D94 D97
310-002-00	TRANSISTOR PNP	2N4403	Q19 Q22 Q70 Q72-76 Q84 Q87
310-007-00	TRANSISTOR NPN	2N4401	Q20-21 Q78 Q80 Q85-86 Q94
310-023-02	TRANSISTOR NPN T&R	2SC2362K	Q43-44 Q47-48 Q53-54 Q57-58 Q61-62 Q65-66 Q77 Q79
310-028-00	TRANSISTOR PNP	2SB940A	Q89
310-029-00	TRANSISTOR NPN	2SD1264A	Q90-91
310-032-02	TRANSISTOR PNP T&R	2SA1016K	Q41-42 Q45-46 Q55-56 Q59-60 Q63-64 Q67-68
310-033-00	TRANSISTOR PNP	MJL21193	Q6-9 Q14-17
310-034-00	TRANSISTOR NPN	MJL21194	Q2-5 Q10-13
310-035-00	TRANSISTOR PNP	2SA1478	Q25-26 Q30 Q34-35 Q39 Q69 Q71 Q81-82
310-036-00	TRANSISTOR NPN	2SC3788	Q24 Q28-29 Q33 Q37-38 Q92
310-037-00	XSTR NPN MJE340 POWER	MJE340	Q50 Q52
310-038-00	XSTR PNP MJE350	MJE350	Q49 Q51
310-042-00	TRANSISTOR NPN	MJE15032	Q23 Q32
310-043-00	TRANSISTOR PNP	MJE15033	Q31 Q40
310-049-00	XSTR PNP 2SA794A	2SA794A	Q1 Q18
310-050-00	XSTR NPN 2SC1567A	2SC1567A	Q27 Q36
323-001-00	I.C. QUAD COMTR THRU HOLE	LM339	U2 U5-6
⚠ 329-012-00	OPTO-ISOLATOR,LED/CDS	VTL5C10	U3-4
⚠ 329-014-00	IC, DEG C TEMPERATURE SENSOR	LM35DZ	U1
⚠ 400-060-00	FUSE CLIP PC MT 5mm DIA		Z1-7 Z9
400-061-00	CONNECTOR HDR STR 2P .100 X 1		J41
⚠ 400-129-00	FUSE CLIP PC MT .25" DIA		Z8 Z10

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

..amplifier continued

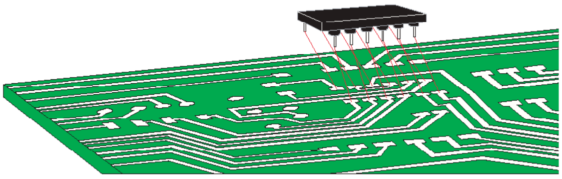
Part #	Description	Value	Reference	
400-133-00	HEADER, 2X3, MATE-N-LOCK	11A 600V	J1	
400-143-00	CONN, HDR, 3-PIN, UN-SHROUDED, 0 .100		J20 J37	
400-166-00	CONNECTOR JACK 1/4" TRS HORIZ, PC MNT		J43 J45	(M-1400i ONLY)
400-171-00	CONN, HDR, 2-PIN, UN-SHROUDED,0 .100		J2-3	
400-173-00	CONN QUICK DISC .250 W/STABLE-LOK TABS		J4-5 J26 J31-36	
400-237-00	BANANA QUAD HORIZ PCMT		J44	
400-341-10	HDR 10P .10X2 STR LCK		J28 J39	
400-341-20	HDR 20P .10X2 STR LCK		J27	
400-353-00	SPEAKONS HORIZ 4 CKT NLM4MD-H-2-NG		J42 J46	(M-1400 ONLY)
⚠ 450-255-00	PCB, MAIN M-1400-S2		Z77	
⚠ 510-021-00	FUSE 5X20	F-10A	F2-5	
⚠ 601-006-00	INDUCTOR, AIR CORE	1uH 10%	L1-2	
660-005-00	Jumper, Uninsulated, 22AWG, 0.400"	ZERO	W1-28	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

055-162-xx Rev A Soft Start board

Part #	Description	Value			Reference	
⚠ 055-162-01	PCB ASSY SOFT START 240V	A1			FOR 240VAC	
⚠ 055-162-02	PCB ASSY SOFT START 100V	A1			FOR 100VAC	
100-068-00	RESISTOR CF	6K2	.125W	5%	R5-8	
100-080-00	RESISTOR CF	20K	.125W	5%	R9	
123-124-00	RESISTOR MOF	13K	3W	5%	R12	
123-125-00	RESISTOR MOF	15K	3W	5%	R1-4	FOR 240VAC VERSION
123-056-00	RESISTOR MOF	20	3W	5%	R1	FOR 100VAC VERSION
123-085-00	RESISTOR MOF	330	3W	5%	R1	FOR 120VAC VERSION
NOTE: R2-R4 NOT USED IN 100VAC OR 120VAC VERSIONS)						
125-019-00	RESISTOR WW	68	15W	5%	R10-11	FOR 100VAC VERSION
125-020-00	RESISTOR WW	82	15W	5%	R10-11	FOR 120VAC VERSION
125-021-00	RESISTOR WW	330	15W	5%	R10-11	FOR 240VAC VERSION
200-036-00	CAPACITOR, METALIZED POLY	.1uF	250V	10%	C3	
220-007-00	CAPACITOR LYTIC RADIAL	100UF	100V	10%	C2	
220-040-00	CAPACITOR LYTIC RADIAL	10UF	160V	20%	C1	
⚠ 301-014-00	DIODE POWER	1N4007	1000V		D1-2 D4	
⚠ 302-001-00	DIODE ZENER	1N5261	47V		D3	
⚠ 310-036-00	TRANSISTOR NPN	2SC3788			Q1	
400-059-00	CONN QUICK DISC 250				J1-4	
⚠ 450-162-00	PCB, M-1200/M-1400 SOFT START				Z12	
⚠ 501-002-00	RELAY SPDT 20AMP 110VDC				K1	

⚠ Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.



THE MACKIE FIXER • MACKIE DESIGNS SERVICE NEWS

FR series Amplifier ribbon replacement instructions (NEW! IMPROVED! July 2000)*

Models affected: FR series M1200, M1400, M1400i

M1200: All models. **M1400i:** Before Serial # DA20889 and all models with "AM" prefix.
M1400 and 230v versions: Before Serial # DB12700 and all models with "AH" prefix.
Add this as part of your normal repair procedures.
Note: This bulletin replaces all previous ribbon bulletins.

Symptom:

Ch.1 or 2 output signal intermittently fades out, or cuts out completely and/or the DC supply rail fuses blow.

Possible Cause:

The two ribbon cables from the input board may be defective

Solution:

*Replace the input ribbon cables with an improved type in all of the above models, (including any which have had the previous ribbon bulletin completed).

Safety Warning:

⚠ Caution! These instructions are for use by qualified personnel only. To avoid electric shock, do not perform any servicing unless you are qualified to do so. Refer all service to qualified personnel.

Tools Required:

Phillips screwdriver, Torx and Allen drivers, needle nose pliers, safety glasses.

Parts Required:

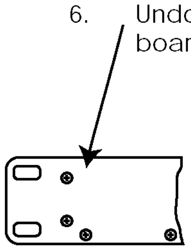
040-359-00	Ribbon cable, 28GA, 20 Pin, Length 4.25", PLZD	Quantity = 1
040-360-00	Ribbon cable, 28GA, 20 Pin, Length 18", PLZD	Quantity = 1
400-077-00	20 Pin Headers	Quantity = 2

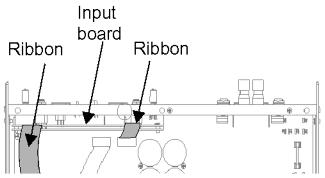
Procedure:

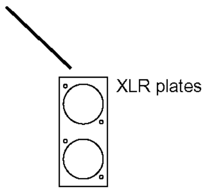
1. Remove all cords (including the power cable and speaker outputs) from the amplifier.
2. Take off the top cover and inspect the ribbon cables. If they are not marked 040-359-00 or 040-360-00 then proceed as follows:

Remove the input board:

3. Undo the XLR screws, TRS nuts, and pull out the four pot knobs.
4. Disconnect the short ribbon cable from the amp board, and the long cable from the front panel display board. On later amplifiers, you will have to remove the front display board first.
5. Disconnect the black ground wire from the amp board.
6. Undo the four screws on the right side of the chassis. This will give enough room to pull out the input board. Catch the two metal XLR plates before they fall inside (not present on later amplifiers).







Continued....

Procedure continued.

Input board work:

If the two ribbon cables are soldered to the input board, follow steps 7 to 11. If not, then go to step 12.

7. Remove the metal shield plate and insulator sheet from the back of the input board.
8. Carefully unsolder the ribbon cable headers from J16 and J11.
   Discard part# 040-033-03, 4 inch ribbon cable.
   Discard part# 040-033-02, 18 inch ribbon cable.
9. Solder two new headers (#400-077-00) to the input board, with the cutout side pointing towards the center of the input board (i.e. downwards).
10. Replace the metal shield plate and insulator sheet onto the back of the input board.
11. Add part# 040-359-00, 4.25 inch ribbon cable to J11.
    Add part# 040-360-00, 18 inch ribbon cable to J16.
    Align each cable's color stripe with the header's pin 1.
    ⚠ Make sure both ribbons are **fully inserted**, then proceed to step 15.

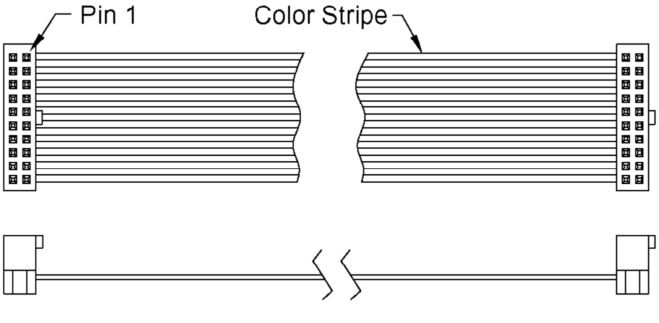
If the two ribbon cables are not soldered to the board, follow steps 12 to 14.

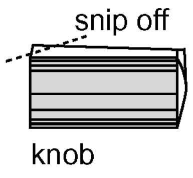
12. Discard part# 040-062-00, 4.25 inch ribbon cable.
    Discard part# 040-062-02, 18 inch ribbon cable. You may have to undo the display board screws in order to remove it from J1.
13. Add part# 040-359-00, 4.25 inch ribbon cable to J11.
    Add part# 040-360-00, 18 inch ribbon cable to J16.
    Align each cable's color stripe with the header's pin 1.
    ⚠ Make sure both ribbons are **fully inserted**.
14. Refit the display board, once the long ribbon cable is securely attached to J1.

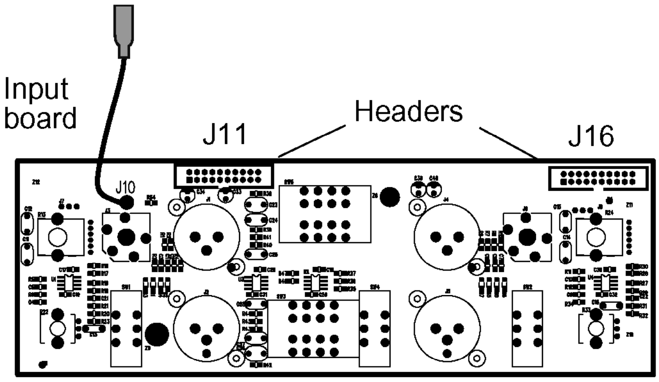
Putting the input board back in:

15. Add the two metal XLR plates (where fitted) and carefully fit the input board back in place. Put the four pot knobs back after the board is in place.
16. It can be difficult getting the knobs back on through the chassis holes, but you can make it easier by snipping off a bit of the plastic center ridge, as shown in the little knob diagram below.
17. Add and tighten all the nuts and screws, and the four chassis screws (removed in step 6).
18. Make sure that all ribbon cables are secure and that all ends are fully inserted.
19. Reconnect the black wire from the input board to the amp board.
20. Replace the top cover.

21/ Perform a complete specification and safety test before returning the unit to the customer.



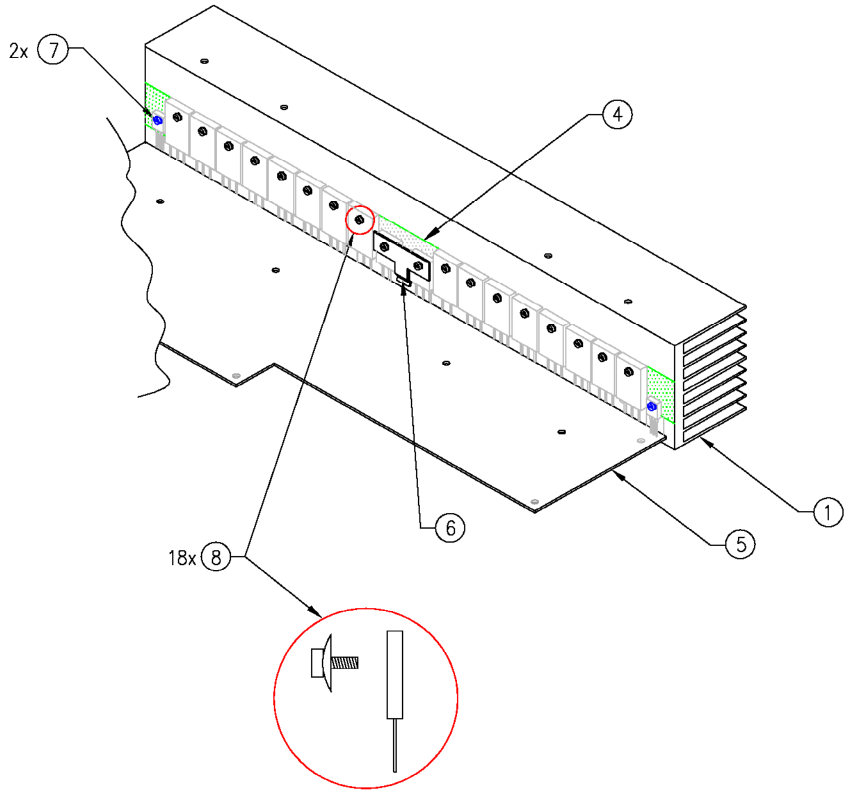




FASTEN TRANSISTOR TO HEATSINK

STEP	TASK
A	INSPECT ITEM ① HEATSINK FOR SCRATCHES, DINGS, AND BURRS. SAND AS REQUIRED TO REMOVE SCRATCHES AND BURRS.
B	CLEAN ITEM ① HEATSINK USING ITEM ② CITRUS CLEANER. USE COMPRESSED AIR TO BLOW OFF ANY REMAINING DUST OR DEBRIS.
C	APPLY A THIN EVEN COAT OF ITEM ③ THERMAL JOINT COMPOUND TO ITEM ① HEATSINK. APPLY TO AREA THAT WILL BE COVERED BY SILPAD.
D	CLEAN ITEM ④ SILPAD WITH A CLEAN CLOTH. SILPADS SHOULD BE STORED IN ORIGINAL PACKAGING TO PREVENT CONTAMINATION FROM DUST OR DEBRIS. IT IS ABSOLUTELY CRITICAL THAT THE HEATSINK AND SILPAD ARE THOROUGHLY CLEAN BEFORE PROCEEDING.
E	PLACE ITEM ④ SILPAD ON ITEM ① HEATSINK. ENSURE HOLES IN SILPAD ALIGN WITH HOLES IN HEATSINK.
F	INSPECT ITEM ⑤ PCB: 1) CHECK TOP SIDE FOR LOOSE, MISSING, LIFTED AND BACKWARDS PARTS. 2) CHECK BACKSIDE FOR UNTRIMMED LEADS, MISSING SOLDER AND SOLDER BRIDGES. 3) CHECK METAL ON TRANSISTORS FOR SCRATCHES, BURRS, OR OTHER MATERIAL THAT MAY DAMAGE SILPAD.
G	INSTALL ITEM ⑤ MAIN PCB ONTO ITEM ① HEATSINK.
H	PLACE ITEM ⑥ (1X) T-CLIP ON CENTER COMPONENTS.
I	INSTALL ALL HARDWARE ITEMS ⑦ (2X), & ⑧ (18X).

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN. LBS.
①	HEATSINK	551-085-00	1	
②	3M CITRUS CLEANER	730-006-00	A/R	
③	THERMAL JOINT COMPOUND	730-001-00	A/R	
④	SILPAD	410-006-00	1	
⑤	MAIN PCB	055-255-01-01	1	
⑥	T-CLIP	550-255-00	1	
⑦	TF 4-40x5/8 TORX 1/4 WASHER	700-087-00	2	10
⑧	TF 4 40x5/8 TORX 3/8 WASHER	700-088-00	18	13



#2 INSTALL SUBSINKS

STEP	TASK
A	TIGHTEN ITEM ① (2X) & ITEM ② (18X) SCREWS. CAUTION: BE SURE THERE IS NO DIRT OR OTHER PARTICLES BETWEEN THE HEATSINK, SILPAD AND COMPONENTS.
B	APPLY ITEM ⑨ SILPAD (2x) TO BOTTOM EDGE OF ITEM ⑧ SUBSINK (2x). CAUTION: THERE CAN NOT BE ANY AIR BUBBLES, DIRT, OR OTHER PARTICLES TRAPPED UNDER OR IN THE SILPAD.
C	APPLY ITEM ⑫ THERMALCOTE AS A THIN FILM ON THE UNDERSIDE OF ITEM ⑧ SUBSINK (2x) AT THE HEATSINK MATING SURFACE.
D	START ITEM ⑪ (2X) SCREWS INTO HEATSINK.
E	INSTALL ITEM ⑧ SUB-SINK (2x) TO PCB, BE SURE BE SURE TO INCLUDE ITEM ⑩ FIBRE WASHER USING 7 IN. LBS.
F	TIGHTEN ITEM ⑧ SUB-SINK (2x) TO ITEM ① HEATSINK ASSEMBLY USING ITEM ⑪ SCREWS (4x). USING 12 IN. LBS.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN. LBS.
1	TF 4-40x5/8 TORX 1/4	700-087-00	2	10
2	TF 4-40x5/8 TORX 3/8	700-088-00	18	13
8	SUB-SINK	550-467-00	2	
9	SIL PAD	410-003-00	A/R	
10	FIBRE WASHER	710-013-00	4	
11	SCR PHP 6-32x3/8	700-010-04	8	7 & 12
12	THERMALCOTE	730-001-00	A/R	

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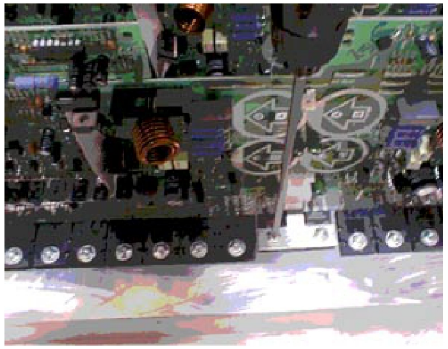

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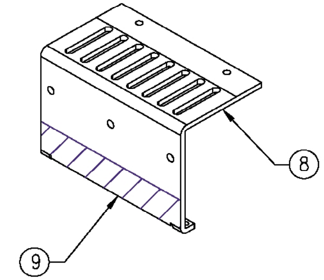
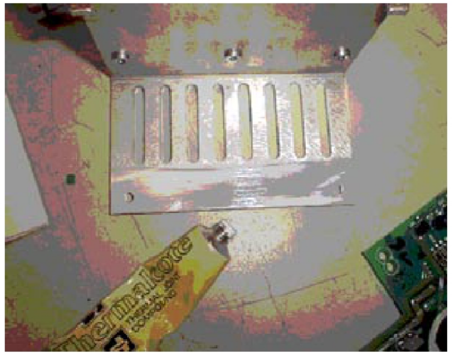


SIL PAD ALONG
BOTTOM EDGE

C



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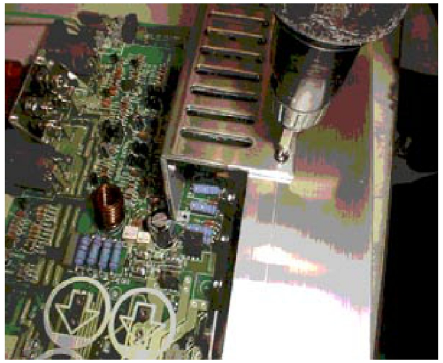

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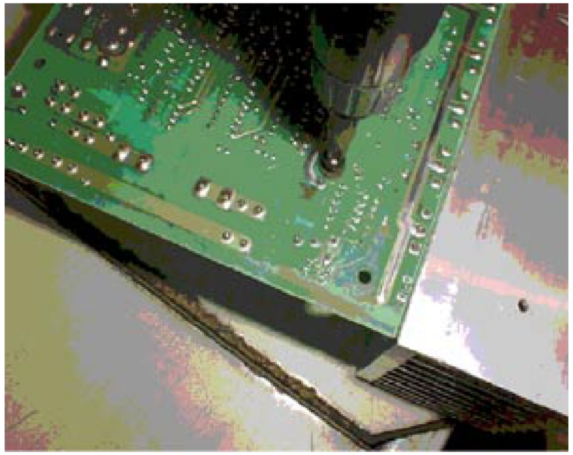

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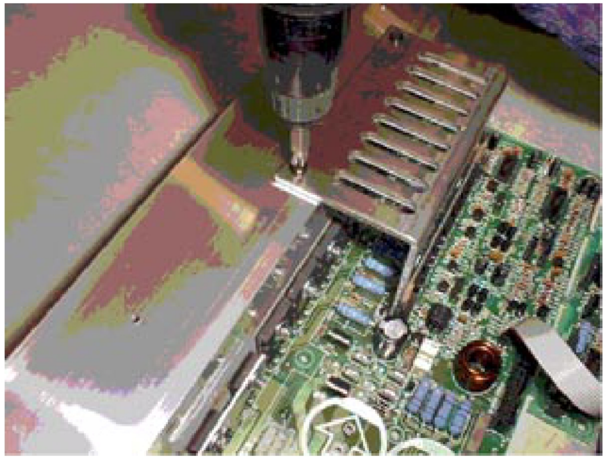
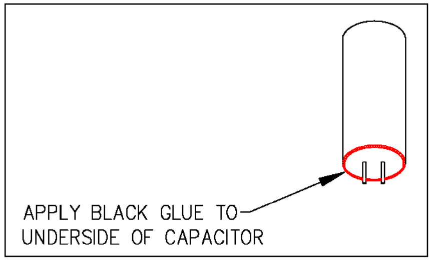
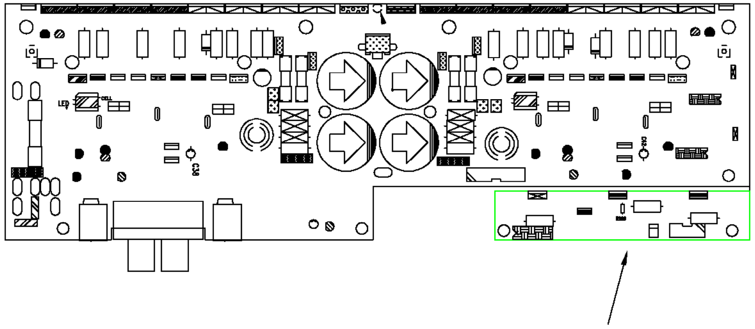
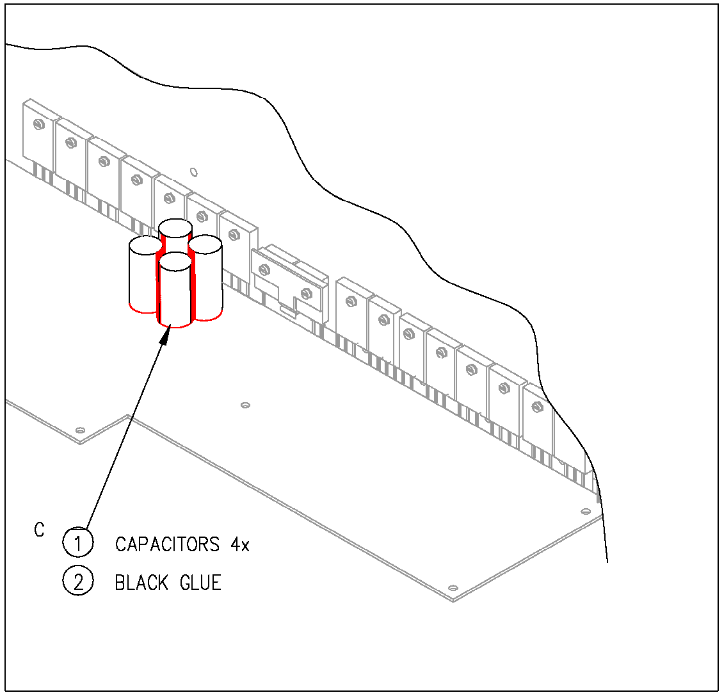


STEP	TASK INSTALL CAPACITORS
A	INSTALL ITEM ① CAPACITORS (4x), USING ITEM ② BLACK GLUE (A/R), TO UNDERSIDE OF CAPS.
B	SOLDER ITEM ① CAPACITORS (4x), USING CAP FIXTURE, AND TRIM LEADS.
C	AFTER SOLDERING CAPS, APPLY ITEM ② BLACK GLUE TO MATING SURFACES BETWEEN CAPACITORS.
D	SEPARATE POWER SUPPLY BOARD FROM MAIN CIRCUIT BOARD FOR USE AT NEXT STATION.


APPLY BLACK GLUE TO UNDERSIDE OF CAPACITOR


SEPARATE POWER SUPPLY PCB FROM MAIN BOARD.

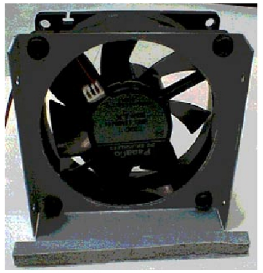


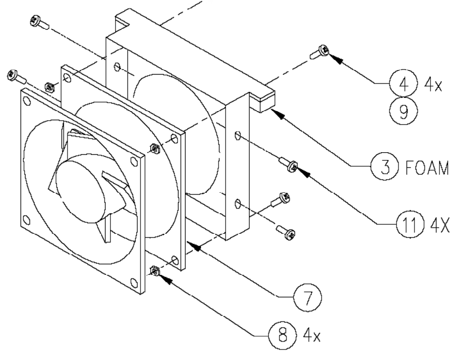
ITEM	DESCRIPTION	PART NUMBER	QTY
1	CAPACITORS 12,000uF	220–035–00	4
2	BLACK GLUE	730–003–00	A/R

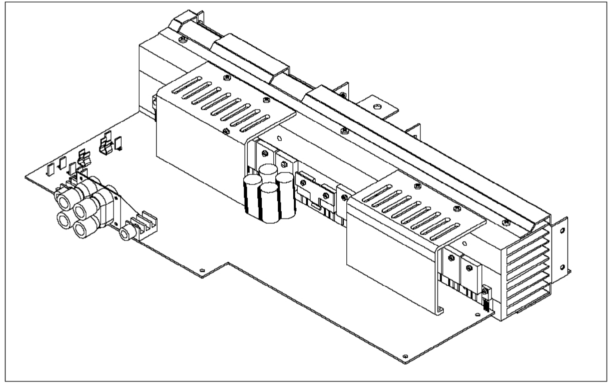
INSTALL FAN AND COWLING

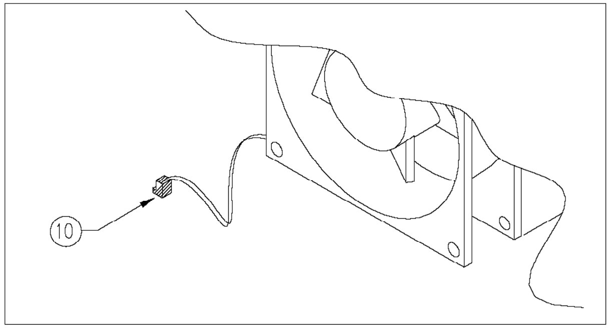
STEP	TASK
A	INSTALL ITEM ⑩ CONNECTOR (1x) ONTO FAN WIRES (SEE NOTE ON PCB AT J3 FOR PROPER WIRE LOCATIONS).
B	MOUNT ITEM ⑦ FAN (1X) TO ITEM ① FAN BRACKET (1X) USING ITEM ④ SCREWS (4X), AND ⑧ NUT (4X). APPLY ITEM ⑨ LOCTITE TO SCREWS.
C	MOUNT ITEM ① FAN BRACKET (1X) TO ITEM ⑤ COWLING (1X) USING ITEM ② SCREWS (4X).
D	INSTALL ITEM ⑤ COWLING (1x) TO HEATSINK USING ITEM ⑥ SCREWS (3x).

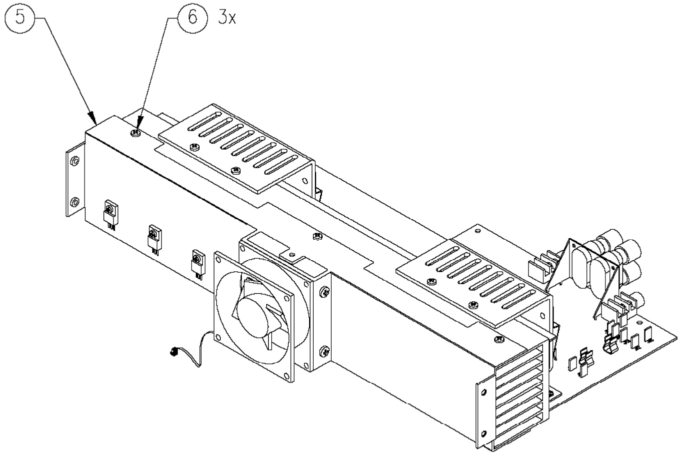
ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN. LBS.
1	FAN BRACKET	550-469-00	1	
3	FOAM	780-136-00	1	
4	8-32x1/4" SCREW PHP BLK OX	700-122-00	4	10
5	COWLING	550-468-00	1	
6	SCREWS 6-32x1/4	700-010-00	3	6
7	FAN PANASONIC	770-007-00	1	
8	NUT 8-32 SMALL DIA	705-024-00	4	
9	LOCKTITE 222	730-025-00	A/R	
10	CONNECTOR 2 PIN	400-083-00	1	
11	SCREWS	700-028-02	4	

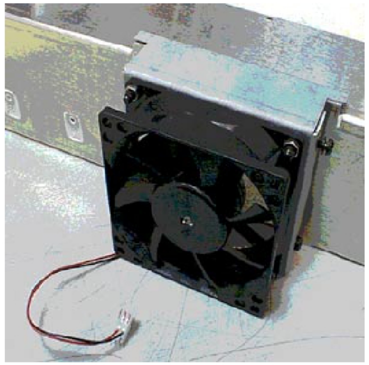












INSTALL SPRING CLIP & FAN PCB

STEP	TASK
A	INSTALL ITEM ⑭ SPRING CLIPS (2x) USING ITEM ⑮ SCREWS (6x), (START ALL SCREWS FIRST BEFORE TIGHTENING).
B	APPLY ITEM ㉕ THERMALCOTE (A/R) ON COMPONENTS THAT MATE TO COWLING.
C	INSTALL FAN SUPPLY PCB TO COWLING USING HARDWARE, ITEMS ㉖ SCREW (3x).
D	CONNECT FAN WIRE TO ITEM ㉙ CONNECTOR, ON PCB.

CAREFULLY INSPECT THE ENTIRE ASSEMBLY BEFORE SENDING TO TEST.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN. LBS.
14	SPRING CLIP	550-237-00	2	
15	SCREW 6-32x5/16	700-028-01	6	10
25	THERMALCOTE	730-001-00	3	
26	4-40x5/8 TORX 1/4	700-087-00	3	7

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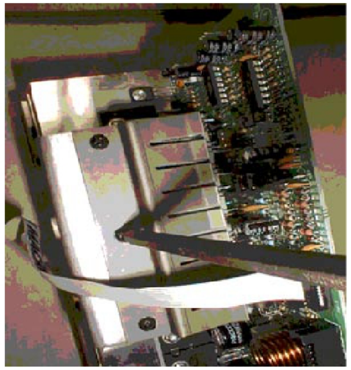

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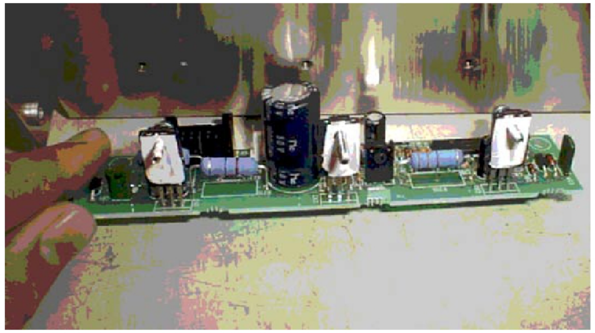

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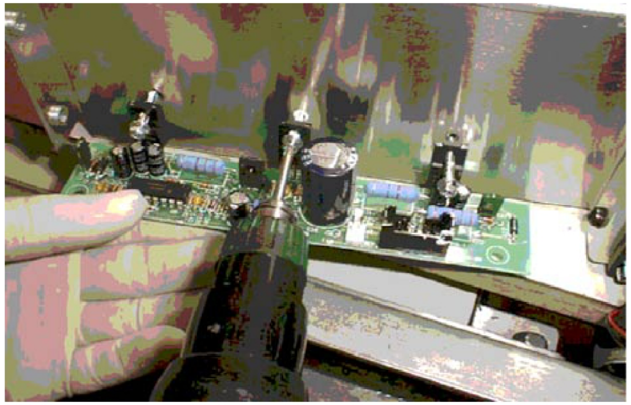

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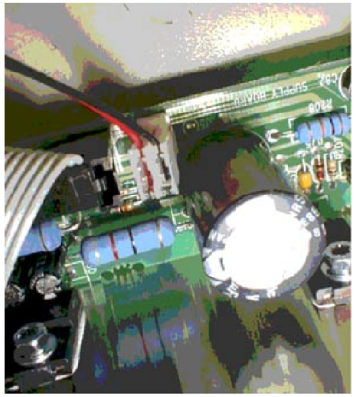

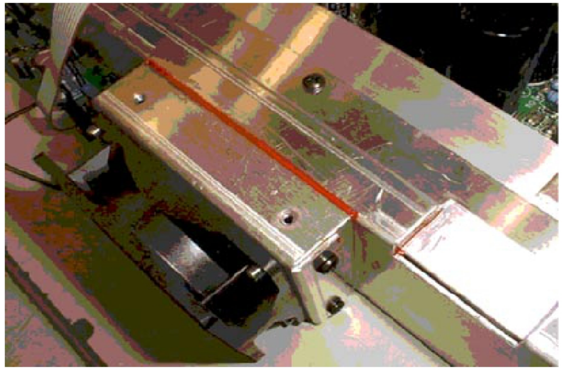

STEP	TASK
A	CLEAN WORK PALLET TO PREVENT DIRT FROM SCRATCHING CHASSIS DURING ASSEMBLY.
B	INSTALL ITEM ① INSULATIVE MYLAR (1X) ONTO ITEM ② INPUT SHIELD (1X).
C	INSTALL ITEMS ① MYLAR SHIELD AND ② INPUT SHIELD ONTO ITEM ③ INPUT PCB (1X) USING ITEM ④ SCREWS (4X).
D	INSTALL ITEM ⑤ AND ⑥ RIBBON CABLES (1X EA.) AS SHOWN.
E	APPLY ITEM ⑦ RTV 162 ADHESIVE TO RIBBON CABLE CONNECTIONS.
G	INSTALL ITEM ⑨ INPUT KNOBS (2X).
H	INSPECT CHASSIS CAREFULLY BRFORE PROCEEDING. LOOK FOR MISSING PEMS, SCRATCHES AND SILKCREEN ERRORS.
I	PLACE ITEM ③ INPUT PCB INTO ITEM ⑩ CHASSIS AND SECURE WITH ITEMS ⑪ WASHER AND ⑫ NUT (2X EA.)
J	SOFT START PCB's ARE INSTALLED IN THE 100V AND 220/240V VERSIONS ONLY
K	ATTACH ITEM ⑬ SOFT START BRACKET (1X) TO ITEM ⑳ HEATSINK ASSY USING ITEM ⑭ SCREWS (2X)
L	ATTACH APPROPRIATE SOFT START PCB ⑮ OR ⑯ (SEE TABLE J) TO BRACKET USING ITEM ⑰ SCREWS (4X)
M	PLACE ITEM ⑱ 240V LABEL ON ALL 220/240V MODELS 090-137-(01, 04, 05, 06, 07) PLACE ITEM ⑲ 100 VOLT LABEL ON JAPANESE MODELS 090-137-02 PLACE ITEM ㉑ 220 VOLT LABEL ON 090-137-03
N	NO VOLTAGE LABEL IS REQUIRED FOR 120 VOLT MODELS.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN LBS
1	MYLAR SHIELD	780-042-00	1	
2	INPUT SHIELD	550-247-00	1	
3	INPUT PCB	055-253-00-01	1	
4	SCREW SEMS 6-32x5/16	700-028-01	4	10
5	4.25" RIBBON CABLE	040-062-00	1	
6	18" RIBBON CABLE	040-062-02	1	
7	RTV 162	730-026-00	A/R	
9	GREY/BLACK KNOBS	760-048-04	4	
10	M1400 CHASSIS	550-470-00	1	
11	CHROME FLAT WASHER	710-002-00	2	
12	CHROME NUT	705-003-00	2	17
13	SOFT START BRACKET	550-294-00	1	
14	SCREW SKT 6-32x3/8	700-083-01	2	10
15	100V SOFT START (SEE ABOVE)	055-162-02	1	
16	240V SOFT START (SEE ABOVE)	055-162-01	1	
17	SCREW SEMS 6-32x5/16	700-028-01	4	10
18	240V LABEL (SEE ABOVE)	840-079-00	1	
19	100V LABEL (SEE ABOVE)	840-073-00	1	
20	MAIN HEATSINK ASSEMBLY	080-149-00	1	
21	220V LABEL (SEE ABOVE)	840-059-00	1	

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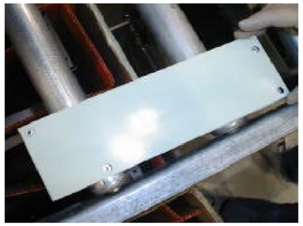

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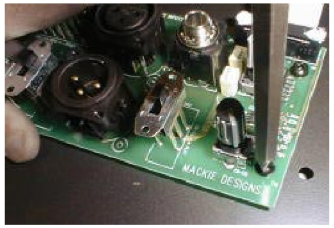

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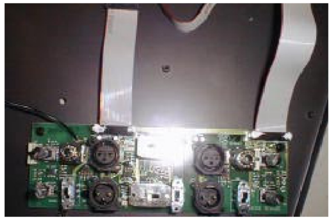

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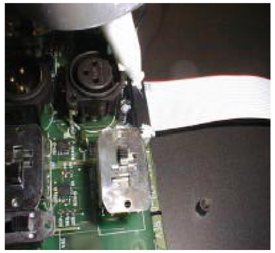

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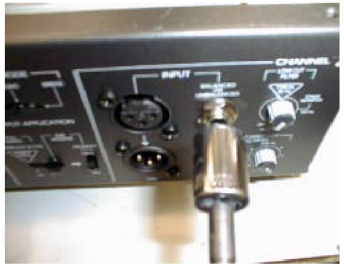

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SOFT START GUIDE

ASSEMBLY	ITEM	SOFT START
090-137-02	⑮	100 VOLT SOFT START
090-137-01 -03, -04, -05, -06, -07	⑯	240 VOLT SOFT START

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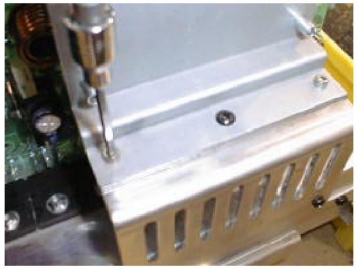

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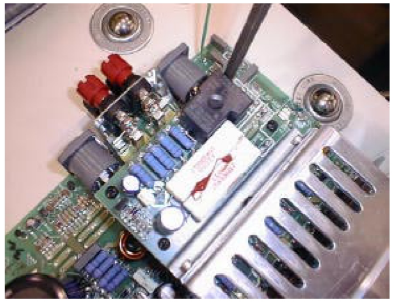

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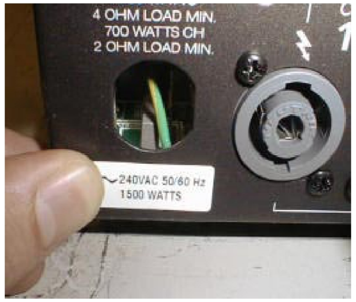

STEP	TASK
A	CONNECT INPUT RIBBON CABLE TO MAIN PCB.
B	CONNECT BLACK WIRE FROM INPUT PCB TO MAIN PCB.
C	START ITEM ① SCREWS (4X) INTO BANNANA JACK AND THEN TIGHTEN.
D	START ITEM ⑧ SCREWS (4X) INTO SPEAKONS AND THEN TIGHTEN.
E	START ITEM ② SCREWS (8X) INTO XLR JACKS AND THEN TIGHTEN.
F/G	APPLY ITEM ③ LOCKTITE TO ITEM ④ SCREWS (2X) AND INSTALL INTO LOCATIONS NEAR LARGE FILTER CAPACITORS.
H	INSTALL REMAINING SCREWS, ITEM ⑦ (5X) HOLDING PCB TO CHASSIS.
I	SOFT START MODELS ONLY: INSTALL ITEMS ⑤ BLUE WIRE (1X) AND ⑥ BROWN WIRE (1X) AS SHOWN.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN. LBS.
1	M3 SCREW	700-085-03	4	10
2	#5 SCREW	701-016-00	8	10
3	LOCTITE BLUE 242	730-016-00	A/R	
4	SCREW 6-32 FILLSTER	700-050-04	2	10
5	BLUE WIRE (SEE ABOVE)	040-152-00	1	
6	BROWN WIRE (SEE ABOVE)	040-153-00	1	
7	SCR #6-32x5/16 SEMS	700-028-01	5	10
8	#4X3/8 PHP2 TYP B BLK	701-022-02	4	5

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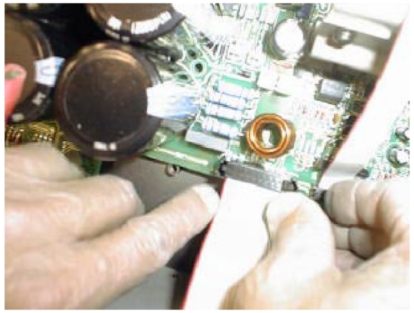

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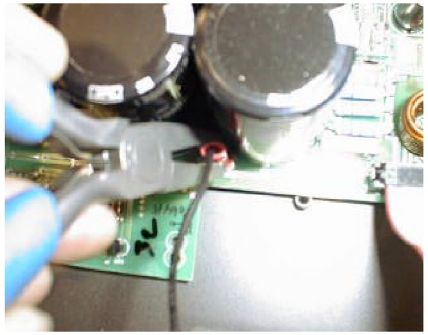

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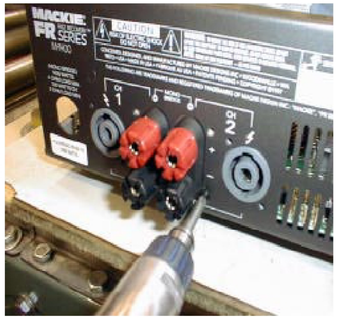

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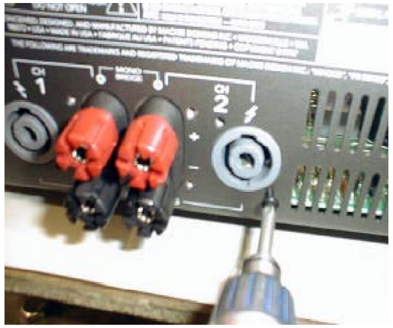

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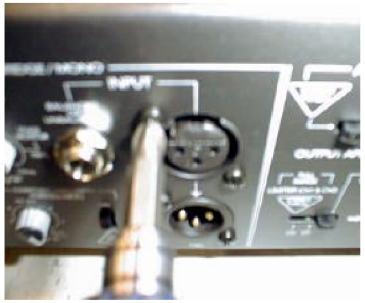

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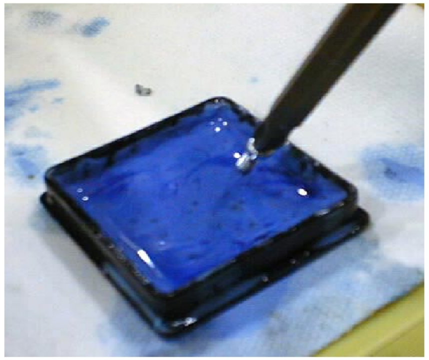

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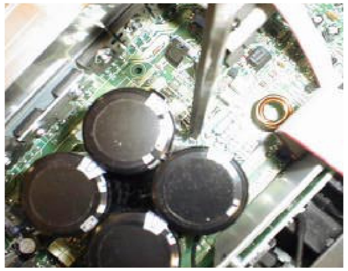

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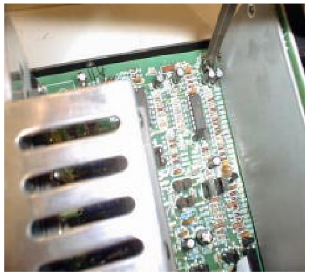

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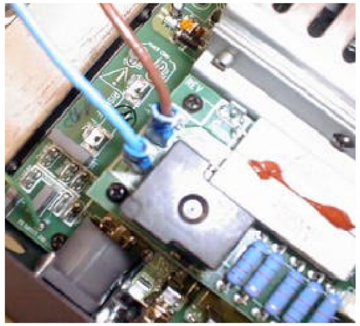

M1400, M1400i series 2

ASSEMBLY DETAILS

ASSEMBLY-2

STEP	TASK
A	PLUG IN RIBBON CABLE FROM INPUT PCB INTO ITEM ① DISPLAY PCB (1X).
B	PUT ITEM ② ADHESIVE ON BOTH ENDS OF HEADER/CABLE CONNECTION TO SECURE PART.
C	PLACE ITEM ② ADHESIVE ON FAN SUPPLY PCB CONNECTION.
D	PLACE ITEM ② ADHESIVE ON MAIB PCB HEADER/CABLE CONNECTION.
E	PLACE DISPLAY PCB INTO CHASSIS AND SECURE USING ITEM ③ SCREWS (6X).
F	PUSH ITEM ④ VOLUME KNOBS (2X) INTO VOLUME POTS.
G	SECURE ITEM ⑤ RIGHT SIDE (1X) USING ITEM ⑥ SCREWS (8X).

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN LBS
1	DISPLAY PCB	055-254-00	1	
2	ADHESIVE RTV 162	730-026-00	A/R	
3	SCREW 4-40X1/4 BTN	700-011-00	6	
4	VOLUME KNOB	760-061-00	2	
5	RICHT SIDE	550-566-00	1	
6	SCREW 6-32 x 5/16	700-028-01	10	10

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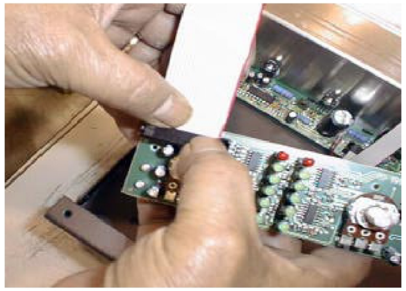

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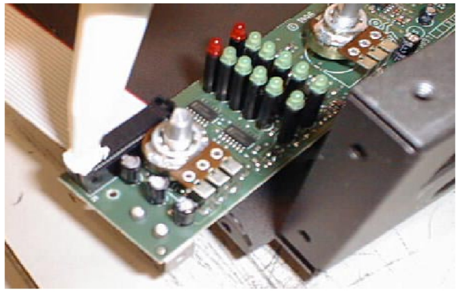

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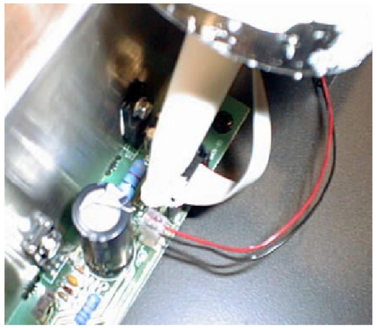

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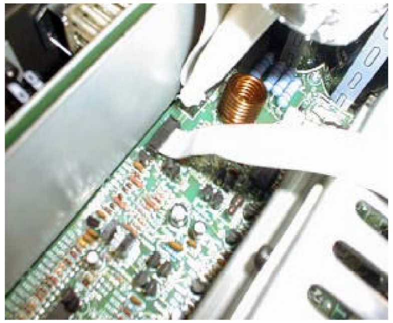

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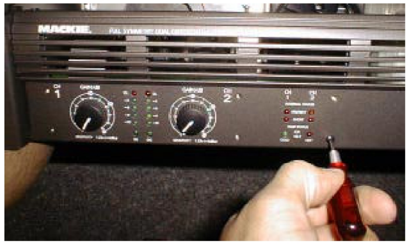


F

G

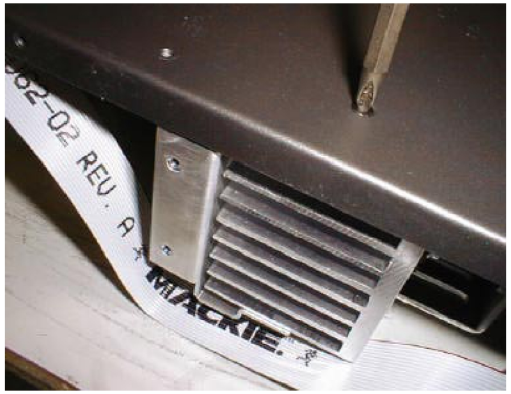
STEP	TASK
A	INSTALL ITEM ① SCREWS (3X) SECURING HEATSINK.
B	INSTALL ITEM ② LEFT SIDE USING ITEM ③ SCREWS (8X). START ALL SCREWS FIRST, BEFORE FULLY TIGHTENING.
C	PLACE ITEM ⑦ STRAIN RELIEF ONTO APPROPRIATE LINE CORD AND INSERT INTO CHASSIS. USE TABLE BELOW TO DETERMINE PROPER LINE CORD.

LINE CORD TABLE

MODEL	CORD
090–137–00	640–006–00 STANDARD 120 VOLT
090–137–01 090–137–03	640–007–01 STANDARD EUROPEAN
090–137–02	640–007–02 JAPANESE
090–137–04	640–007–03 UK/ENGLAND
090–137–05	640–007–04 ITALY
090–137–06	640–007–05 AUSTRALIA
090–137–07	640–007–06 SWISS

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN LBS
1	TF 6–32x3/8 SCREW	700–086–00	3	15
2	LEFT SIDE	550–568–00	1	
3	SCREW SEMS 6–32x5/16	700–028–01	10	10
4	STRAIN RELIEF	740–004–00	1	

A



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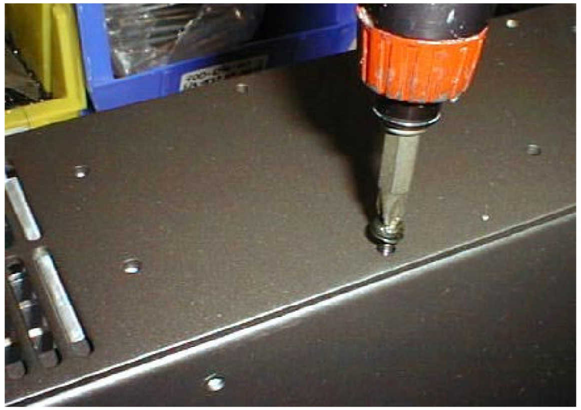

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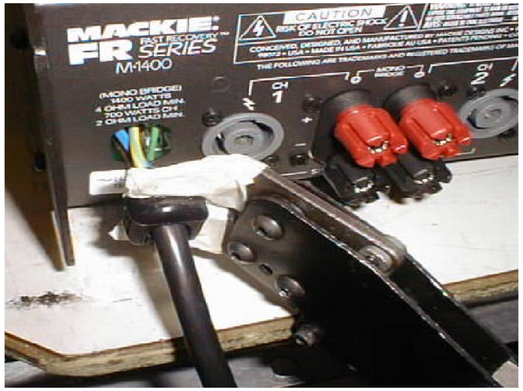
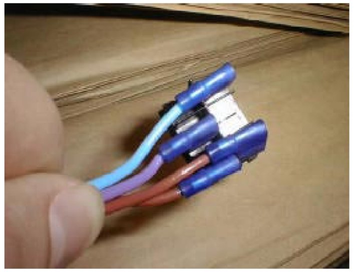


STEP	TASK
A	INSTALL ITEM ① WIRE HARNESS (1X) ONTO ITEM ② SWITCH (1X). NOTE: GENTLY BEND ONE OF THE CONTACT TABS THAT THE BROWN WIRE PLUGS INTO. THIS WILL ALLOW BOTH WIRES TO BE PLUGGED ON AS SHOWN.
B	INSTALL ITEM ② SWITCH INTO CHASSIS.
C	INSTALL ITEM ⑦ TRANSFORMER AND ALL HARDWARE SHOWN IN DIAGRAM IN CHASSIS.
D	ITEM ④ 3" BOLT IS USED ON 230 VOLT VERSIONS ONLY [090-137-(01, 03, 04, 05, 06, 07)]. ITEM ③ 2 3/4" BOLT IS USED ON 100 VOLT AND 120 VOLT MODELS [090-137-(00 AND 02)].
E	USE TRANSFORMER TABLE TO DETERMINE PROPER TRANSFORMER
F	BE SURE PRIMARY WIRES (BLACK INSULATED WIRES) EXIT THE TRANSFORMER PERPENDICULAR TO THE RIGHT SIDE. TIGHTEN TRANSFORMER.
G	APPLY ITEM ⑫ LOCTITE (A/R) TO TRANSFORMER NUT AND BOLT THREADS.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN LBS
1	SWITCH HARNESS	080-035-00	1	
2	SWITCH	500-022-00	1	
3	5/16 x 2 3/4 BOLT	700-106-00	1	
4	5/16 x 3 BOLT	700-059-00	1	
5	5/16 WASHER	710-024-00	1	
6	RIBBER DISC	780-111-00	1	
7	TRANSFORMER	USE TABLE "E"	1	
8	RUBBER DISC	780-111-00	1	
9	METAL DISC	550-249-00	1	
10	5/16 WASHER	710-024-00	1	
11	5/16 STOVER NUT	705-019-00	1	145
12	LOCTITE BLUE 242	730-016-00	A/R	

A



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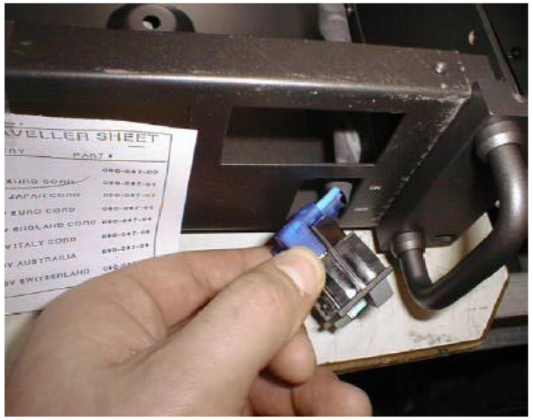

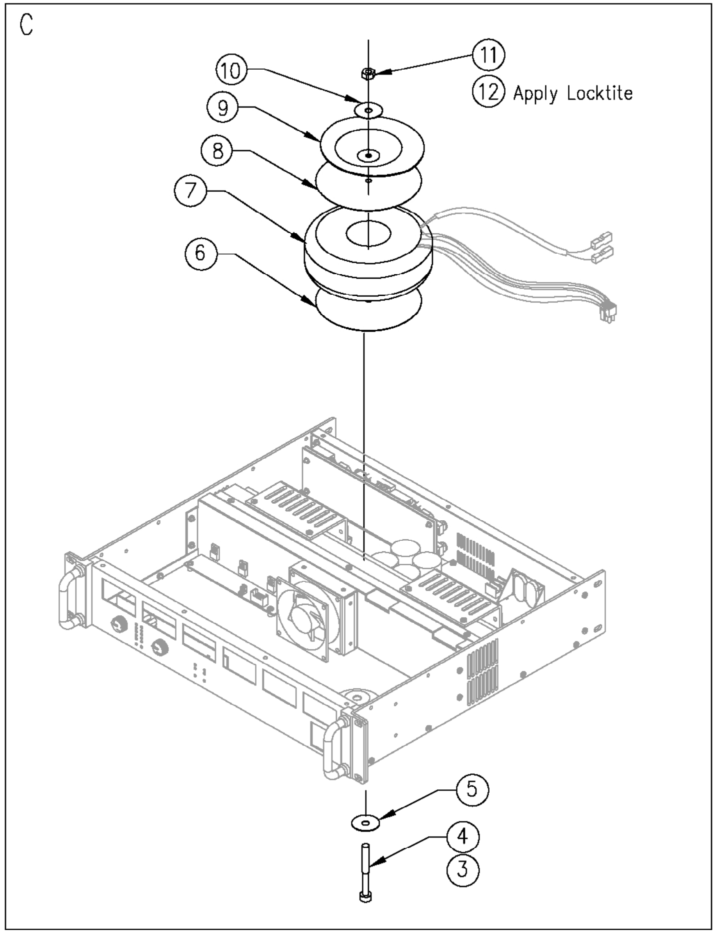

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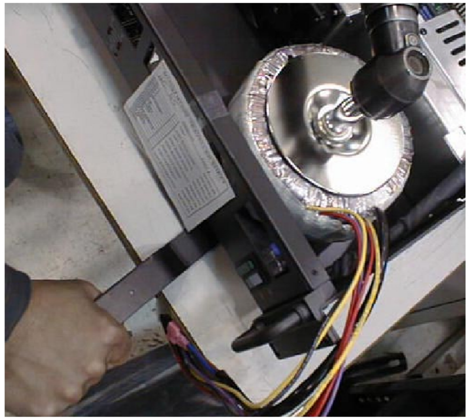


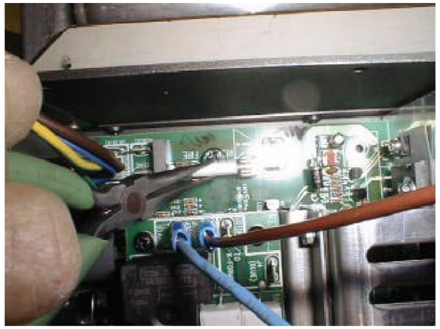
E

TRANSFORMER TABLE	
MODEL	TRANSFORMER
090-137-00	600-016-00 120 VOLT
090-137-02	600-016-02 100 VOLT
090-137-01 (-03, -04, -05, -06, -07)	600-016-01 230 VOLT

<table>
<tr><th>STEP</th><th colspan="2">TASK</th></tr>
<tr><td>A</td><td colspan="2">CAUTION: BEFORE INSTALLING FUSE, BE ABSOLUTELY SURE YOU ARE USING THE PROPER FUSE FOR THE MODEL YOU ARE ASSEMBLYING. DO NOT TRUST PART NUMBERS ON BINS. PHYSICALLY LOOK AT FUSE AND VERIFY VALUE. BE SURE FUSE IS HELD TIGHT WITH FUSE CLIPS.</td></tr>
<tr><td></td><td>MODEL</td><td>FUSE</td></tr>
<tr><td></td><td>090–067–00 (120V)
090–067–02 (100V)</td><td>510–017–00/20 AMP SLO BLO</td></tr>
<tr><td></td><td>090–097–01, 03, 04
05, 06, 07 (240V)</td><td>510–023–00/8 AMP SLO BLO</td></tr>
<tr><td>B</td><td colspan="2">CONNECT LINE CORD WIRES AS SHOWN.</td></tr>
<tr><td>C</td><td colspan="2">CONNECT LINE CORD GROUND WIRE TO STUD USING ITEM ① KEPNUT (1X). TIGHTEN BEFORE PROCEEDING.</td></tr>
<tr><td>D</td><td colspan="2">CONNECT PCB GROUND WIRE TO STUD USING ITEM ① KEPNUT (1X).</td></tr>
<tr><td>E</td><td colspan="2">SOFT START MODELS ONLY: PLUG BLUE AND BROWN WIRES FROM SOFT START TO MAIN PCB LABELED J34:BLUE, J:35 BROWN.</td></tr>
<tr><td>F</td><td colspan="2">PLUG IN SWITCH WIRES AS LABELED ON PCB J31:BLUE, J32:VIO, J33:BRN, J36:BRN.</td></tr>
<tr><td>G</td><td colspan="2">SOFT START MODELS: PLUG PRIMARY WINDINGS FROM TRANSFORMER INTO SOFT START AS SHOWN. OTHER MODELS: PLUG DIRECTLY INTO MAIN PCB J34:BLUE, J:35 BROWN.</td></tr>
<tr><td>H</td><td colspan="2">INSTALL
ITEM ③ BLACK TYWRAPS (2X) AS SHOWN ON TRANSFORMER/SWITCH WIRES. INSTALL ITEM ④ WHITE TYWRAPS (2X) ON TRANSFORMER SECONDARY WIRES: ONE ON EACH SIDE OF THE HEATSINK.</td></tr>
</table>

ITEM	DESCRIPTION	P/N	QTY
1	#6 KEPNUT	705–001–00	2
2	8" BLACK TYWRAP	740–003–00	2
3	WHITE TYWRAP	740–001–00	2

A



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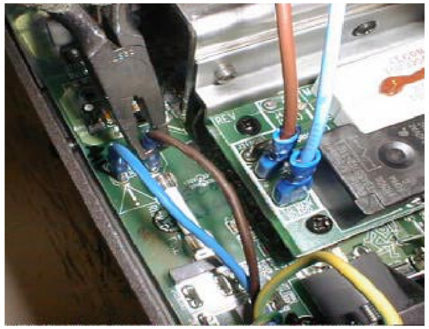

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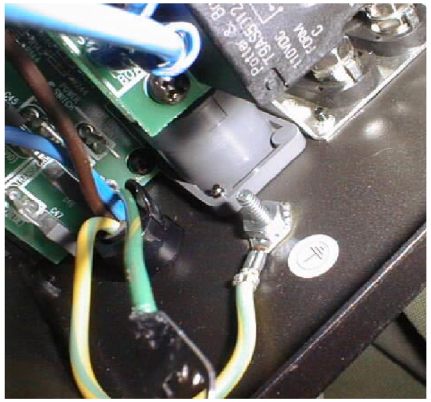

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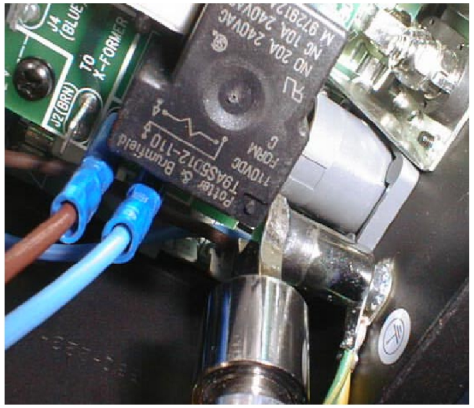

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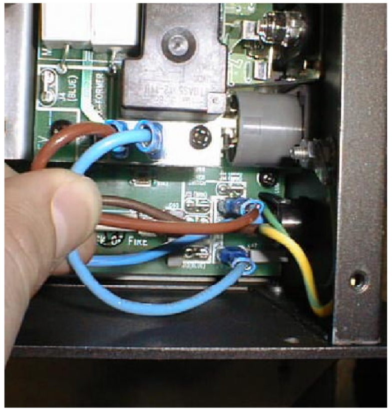

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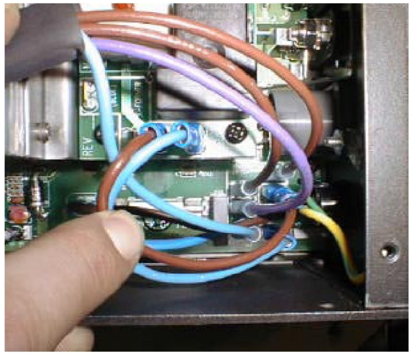

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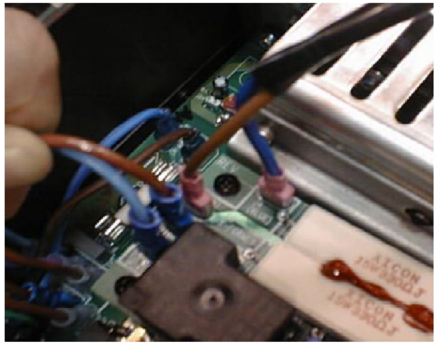

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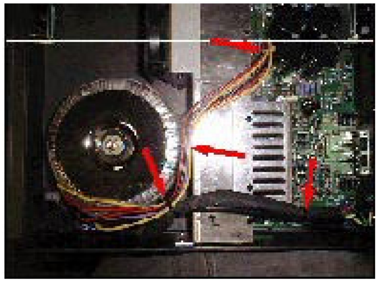
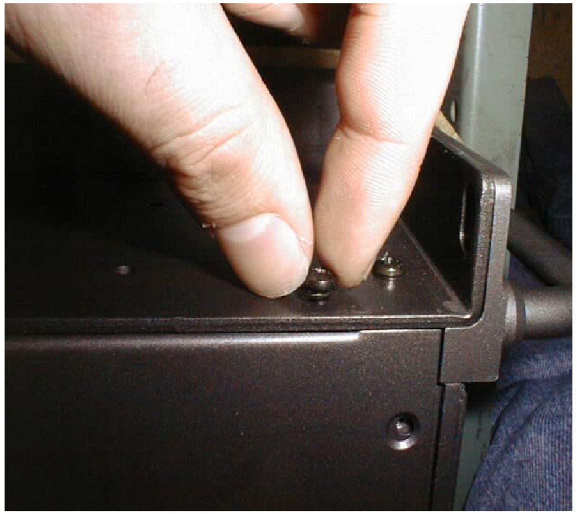


STEP	TASK
A	INSTALL ITEM ② BEZEL (1X) AND ITEM ③ TOP COVER (1X). START ITEM ④ SCREWS (8X) INTO SIDES. INSTALL ITEM ① TOP SCREWS (7X).
B	TIGHTEN SCREWS ONLY AFTER ALL SCREWS HAVE BEEN STARTED.

ITEM	DESCRIPTION	PART NUMBER	QTY	TORQUE IN LBS
1	MCH SCREW #6 FLAT	700-041-04	7	7
2	M1400 FRONT BEZEL	551-029-10	1	
3	TOP COVER	550-564-00	1	
4	6-32 x 5/16 SEMS SCREW	700-028-01	8	7

A



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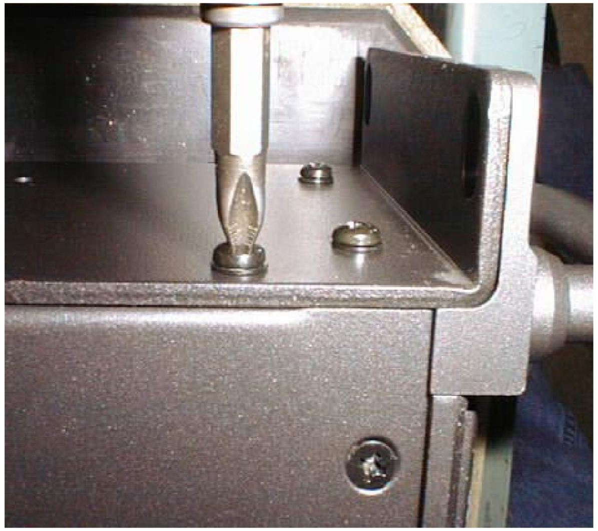
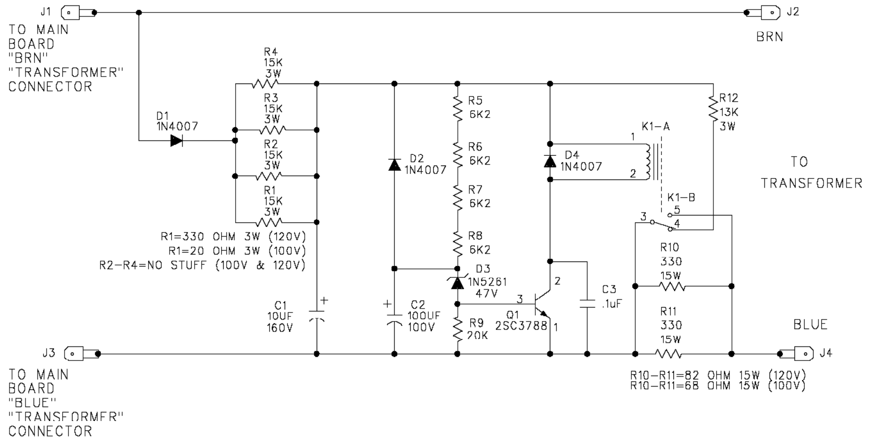
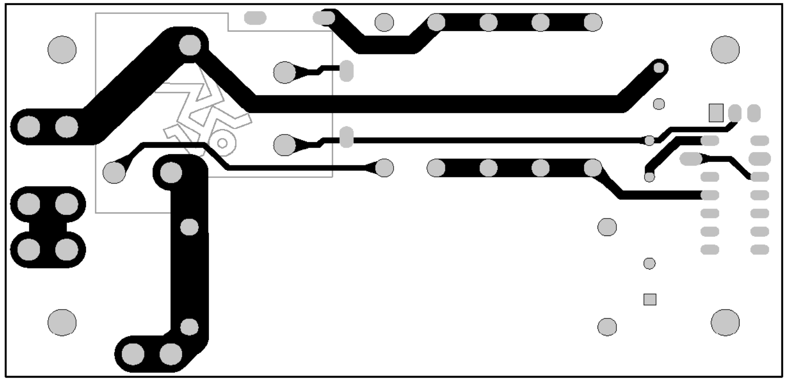


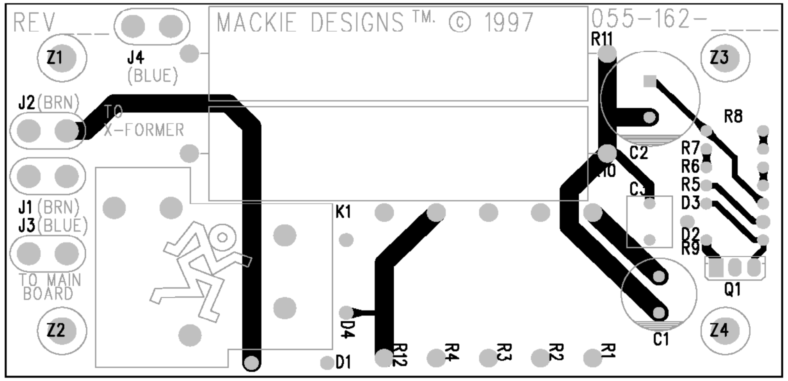
DWG. NO.	SHT	REV:
990-162-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE


J1
TO MAIN BOARD "BRN" "TRANSFORMER" CONNECTOR
J2
BRN
R4 15K 3W
R3 15K 3W
R2 15K 3W
R1 15K 3W
D1 1N4007
R1=330 OHM 3W (120V)
R1=20 OHM 3W (100V)
R2-R4=NO STUFF (100V & 120V)
C1 10UF 160V
D2 1N4007
C2 100UF 100V
R5 6K2
R6 6K2
R7 6K2
R8 6K2
D3 1N5261 47V
R9 20K
Q1 2SC3788
1
2
3
D4 1N4007
K1-A
K1-B
5
4
C3 .1uF
R12 13K 3W
TO TRANSFORMER
R10 330 15W
R11 330 15W
BLUE
J4
J3
TO MAIN BOARD "BLUE" "TRANSFORMER" CONNECTOR
R10-R11=82 OHM 15W (120V)
R10-R11=68 OHM 15W (100V)

Solder side




REV ___
MACKIE DESIGNS ™ © 1997
055-162-____
Z1
J4 (BLUE)
R11
Z3
J2 (BRN)
TO X-FORMER
R8
R7
R6
R5
D3
D2
R9
C2
C3
R10
J1 (BRN)
J3 (BLUE)
K1
TO MAIN BOARD
Q1
Z2
D4
D1
R12
R4
R3
R2
R1
C1
Z4

Component side

NOTE: SCHEMATIC IS SHOWN WITH 240VAC VALUES

☐ **NO STUFF R2-R4 FOR 100VAC OR 120VAC VERSIONS**
XXX

☐ **REPLACES R10-R11 FOR 120VAC VERSION**
82 15W

☐ **REPLACES R1 FOR 120VAC VERSION**
330 3W

☐ **REPLACES R10-R11 FOR 100VAC VERSION**
68 15W

☐ **REPLACES R1 FOR 100VAC VERSION**
20 3W

☐ PCB, M-1200/M-1400 SOFT START

~~UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:~~
~~FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA~~
~~MATERIAL: SEE NOTES~~
~~FINISH: SEE NOTES~~
DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN:	Chuck J	4-15-97
CHECKED:		
NP ENG:	Cameron Jones	4-25-97
MATERIAL:		
MFG:		
MFG ENG:		
ISSUED:		

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

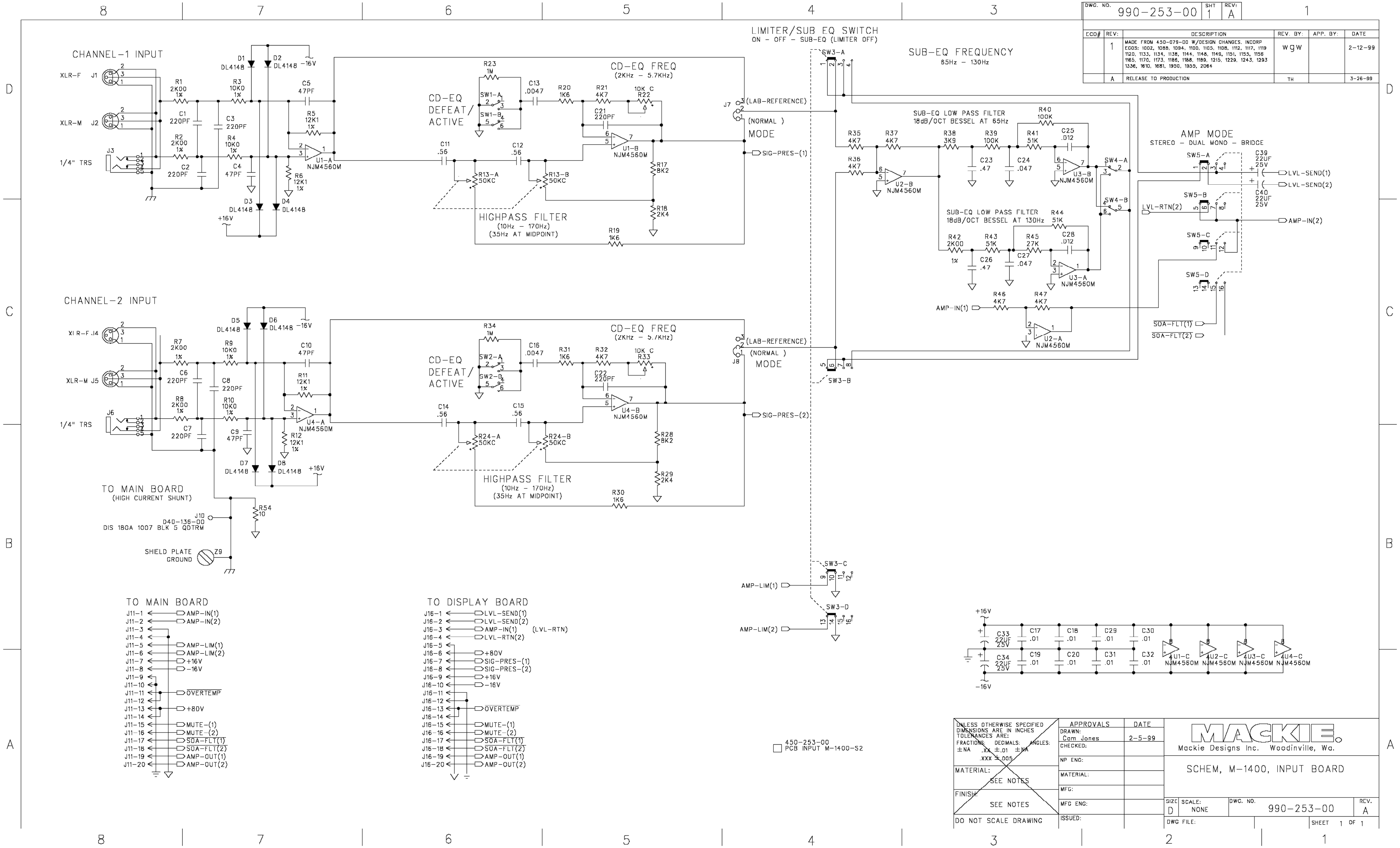
SCHEMATIC,
M1400
SOFT START

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-162-00	A

DWG FILE: SHEET 1 OF 1

DWG. NO.	SHT	REV:
990-253-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 450-079-00 W/DESIGN CHANGES. INCORP ECOS: 1002, 1086, 1094, 1100, 1105, 1108, 1112, 1117, 1119 1120, 1133, 1134, 1138, 1144, 1148, 1149, 1151, 1155, 1156 1165, 1170, 1173, 1186, 1188, 1189, 1215, 1229, 1243, 1293 1336, 1610, 1681, 1950, 1955, 2064	wgw		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99



8
7
6
5
4
3
2
1
D
C
B
A
CHANNEL-1 INPUT
XLR-F J1
XLR-M J2
J3
1/4" TRS
R1 2K00 1%
C1 220PF
R2 2K00 1%
C2 220PF
R3 10K0 1%
C3 220PF
R4 10K0 1%
C4 47PF
D1 DL4148
D2 DL4148
D3 DL4148
D4 DL4148
-16V
+16V
C5 47PF
R5 12K1 1%
R6 12K1 1%
U1-A NJM4560M
CD-EQ DEFEAT/ ACTIVE
R23 1M
SW1-A
SW1-B
C13 .0047
R20 1K6
CD-EQ FREQ
(2KHz - 5.7KHz)
R21 4K7
R22 10K C
C21 220PF
U1-B NJM4560M
R17 8K2
R18 2K4
C11 .56
C12 .56
R13-A 50KC
R13-B 50KC
HIGHPASS FILTER
(10Hz - 170Hz)
(35Hz AT MIDPOINT)
R19 1K6
J7
(LAB-REFERENCE)
(NORMAL) MODE
SIG-PRES-(1)
LIMITER/SUB EQ SWITCH
ON - OFF - SUB-EQ (LIMITER OFF)
SW3-A
SUB-EQ FREQUENCY
65Hz - 130Hz
SUB-EQ LOW PASS FILTER
18dB/OCT BESSEL AT 65Hz
R35 4K7
R37 4K7
R38 3K9
R39 100K
R40 100K
R41 51K
C25 .012
C23 .47
C24 .047
U3-B NJM4560M
R36 4K7
U2-B NJM4560M
SW4-A
SW4-B
SUB-EQ LOW PASS FILTER
18dB/OCT BESSEL AT 130Hz
R42 2K00 1%
R43 51K
R44 51K
R45 27K
C28 .012
C26 .47
C27 .047
U3-A NJM4560M
AMP-IN(1)
R46 4K7
R47 4K7
U2-A NJM4560M
AMP MODE
STEREO - DUAL MONO - BRIDGE
SW5-A
SW5-B
SW5-C
SW5-D
C39 22UF 25V
C40 22UF 25V
LVL-SEND(1)
LVL-SEND(2)
LVL-RTN(2)
AMP-IN(2)
SOA-FLT(1)
SOA-FLT(2)
CHANNEL-2 INPUT
XLR-F J4
XLR-M J5
J6
1/4" TRS
R7 2K00 1%
C6 220PF
R8 2K00 1%
C7 220PF
R9 10K0 1%
C8 220PF
R10 10K0 1%
C9 47PF
D5 DL4148
D6 DL4148
D7 DL4148
D8 DL4148
C10 47PF
R11 12K1 1%
R12 12K1 1%
U4-A NJM4560M
R34 1M
SW2-A
SW2-B
C16 .0047
R31 1K6
R32 4K7
R33 10K C
C22 220PF
U4-B NJM4560M
R28 8K2
R29 2K4
C14 .56
C15 .56
R24-A 50KC
R24-B 50KC
HIGHPASS FILTER
(10Hz - 170Hz)
(35Hz AT MIDPOINT)
R30 1K6
J8
(LAB-REFERENCE)
(NORMAL) MODE
SIG-PRES-(2)
SW3-B
TO MAIN BOARD
(HIGH CURRENT SHUNT)
J10
D40-136-00
DIS 18GA 1007 BLK 5 QDTRM
R54 10
SHIELD PLATE GROUND
Z9
SW3-C
AMP-LIM(1)
SW3-D
AMP-LIM(2)
TO MAIN BOARD
J11-1 AMP-IN(1)
J11-2 AMP-IN(2)
J11-3
J11-4
J11-5 AMP-LIM(1)
J11-6 AMP-LIM(2)
J11-7 +16V
J11-8 -16V
J11-9
J11-10
J11-11 OVERTEMP
J11-12
J11-13 +80V
J11-14
J11-15 MUTE-(1)
J11-16 MUTE-(2)
J11-17 SOA-FLT(1)
J11-18 SOA-FLT(2)
J11-19 AMP-OUT(1)
J11-20 AMP-OUT(2)
TO DISPLAY BOARD
J16-1 LVL-SEND(1)
J16-2 LVL-SEND(2)
J16-3 AMP-IN(1) (LVL-RTN)
J16-4 LVL-RTN(2)
J16-5
J16-6 +80V
J16-7 SIG-PRES-(1)
J16-8 SIG-PRES-(2)
J16-9 +16V
J16-10 -16V
J16-11
J16-12
J16-13 OVERTEMP
J16-14
J16-15 MUTE-(1)
J16-16 MUTE-(2)
J16-17 SOA-FLT(1)
J16-18 SOA-FLT(2)
J16-19 AMP-OUT(1)
J16-20 AMP-OUT(2)
450-253-00
PCB INPUT M-1400-S2
+16V
-16V
C33 22UF 25V
C34 22UF 25V
C17 .01
C18 .01
C29 .01
C30 .01
C19 .01
C20 .01
C31 .01
C32 .01
U1-C NJM4560M
U2-C NJM4560M
U3-C NJM4560M
U4-C NJM4560M

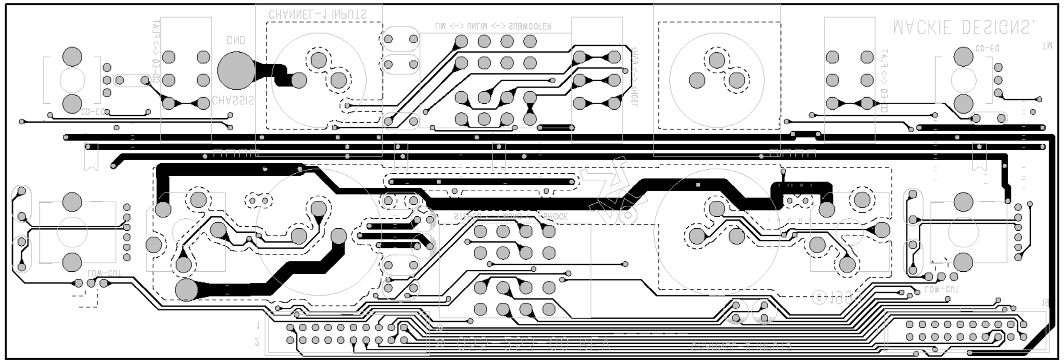
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	APPROVALS	DATE
	DRAWN: Cam Jones	2-5-99
	CHECKED:	
MATERIAL: SEE NOTES	NP ENG:	
	MATERIAL:	
FINISH: SEE NOTES	MFG:	
	MFG ENG:	
DO NOT SCALE DRAWING	ISSUED:	

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

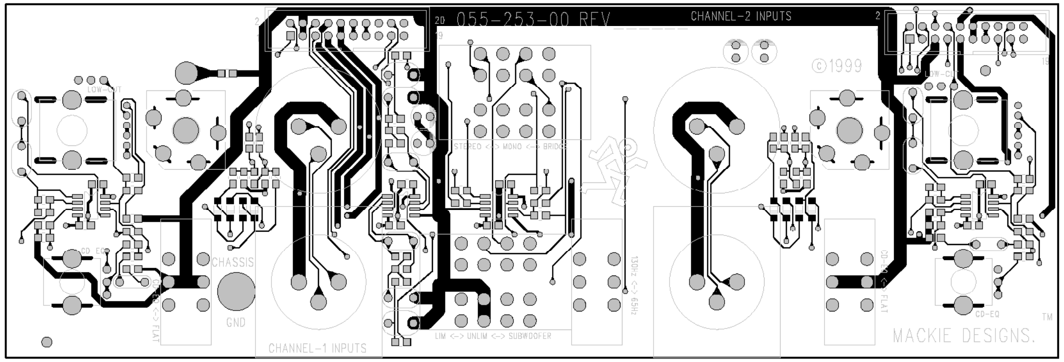
SCHEM, M-1400, INPUT BOARD

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-253-00	A

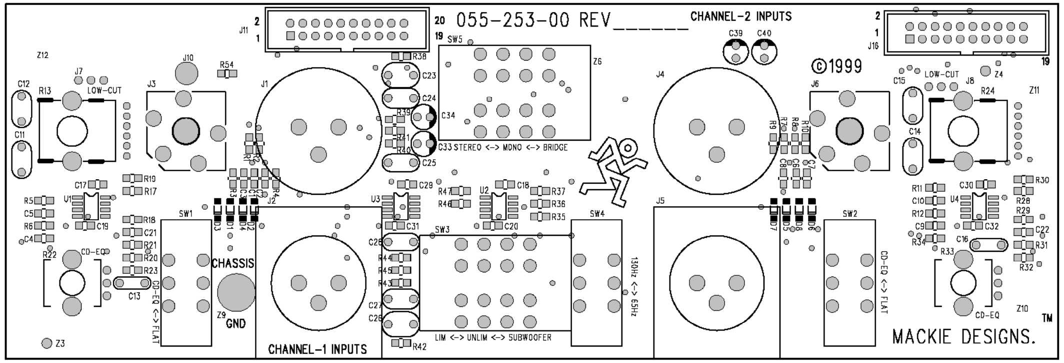
DWG FILE: SHEET 1 OF 1


CHANNEL-1 INPUTS
LIM <-> UNLIM <-> SUBWOOFER
MACKIE DESIGNS.
CHASSIS
GND

Solder side
traces and pads


055-253-00 REV
CHANNEL-2 INPUTS
©1999
STEREO <-> MONO <-> BRIDGE
CHASSIS
GND
CHANNEL-1 INPUTS
LIM <-> UNLIM <-> SUBWOOFER
130Hz <-> 65Hz
CD-EQ <-> FLAT
MACKIE DESIGNS.

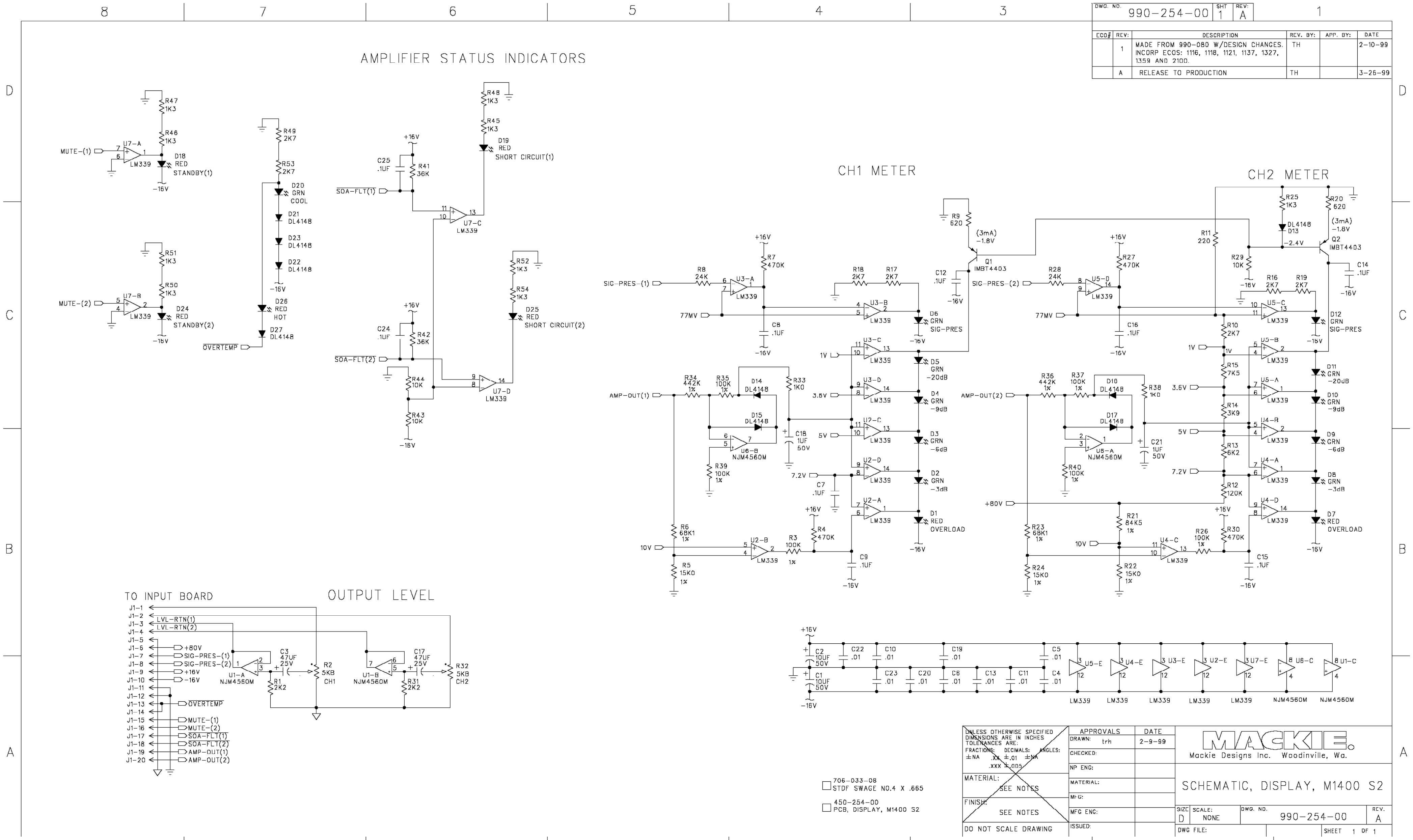
Component side
traces and pads


J11
055-253-00 REV______
CHANNEL-2 INPUTS
C39
C40
J16
SW5
Z6
Z12
J7
LOW-CUT
J10
R54
J1
J4
©1999
J6
C15
LOW-CUT
J8
Z4
Z11
C12
R13
J3
R38
C23
C24
C34
R39
R41
R40
C25
C33 STEREO <-> MONO <-> BRIDGE
R24
C11
C14
C17
R19
R17
U1
R5
C5
R6
C4
C19
R18
C21
R21
R20
R23
R22
CD-EQ
C13
CD-EQ <-> FLAT
SW1
CHASSIS
Z9
GND
J2
U3
C29
R47
R46
U2
C18
R37
R36
R35
C20
SW4
SW3
C31
C28
R45
R44
R43
C27
C26
R42
130Hz <-> 65Hz
LIM <-> UNLIM <-> SUBWOOFER
CHANNEL-1 INPUTS
J5
SW2
CD-EQ <-> FLAT
R11
C10
R12
C9
R34
C16
R33
C30
U4
C32
R30
R28
R29
C22
R31
R32
CD-EQ
Z10
Z3
MACKIE DESIGNS.
TM

Component side

DWG. NO. 990-254-00 SHT 1 REV: A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-080 W/DESIGN CHANGES. INCORP ECOS: 1116, 1118, 1121, 1137, 1327, 1359 AND 2100.	TH		2-10-99
	A	RELEASE TO PRODUCTION	TH		3-26-99



8
7
6
5
4
3
1
D
C
B
A
AMPLIFIER STATUS INDICATORS
R47 1K3
R46 1K3
MUTE-(1)
U7-A LM339
D18 RED STANDBY(1)
-16V
R51 1K3
R50 1K3
MUTE-(2)
U7-B LM339
D24 RED STANDBY(2)
R49 2K7
R53 2K7
D20 GRN COOL
D21 DL4148
D23 DL4148
D22 DL4148
D26 RED HOT
D27 DL4148
OVERTEMP
R48 1K3
R45 1K3
D19 RED SHORT CIRCUIT(1)
+16V
C25 .1UF
R41 36K
SOA-FLT(1)
U7-C LM339
R52 1K3
R54 1K3
D25 RED SHORT CIRCUIT(2)
C24 .1UF
R42 36K
SOA-FLT(2)
R44 10K
R43 10K
U7-D LM339
CH1 METER
SIG-PRES-(1)
R8 24K
U3-A LM339
R7 470K
C8 .1UF
77MV
R18 2K7
R17 2K7
U3-B LM339
D6 GRN SIG-PRES
R9 620
(3mA) -1.8V
Q1 IMBT4403
C12 .1UF
1V
U3-C LM339
D5 GRN -20dB
AMP-OUT(1)
R34 442K 1%
R35 100K 1%
D14 DL4148
R33 1K0
D15 DL4148
U6-B NJM4560M
R39 100K 1%
C18 1UF 50V
3.8V
U3-D LM339
D4 GRN -9dB
5V
U2-C LM339
D3 GRN -6dB
7.2V
C7 .1UF
U2-D LM339
D2 GRN -3dB
U2-A LM339
D1 RED OVERLOAD
R4 470K
R6 68K1 1%
10V
U2-B LM339
R3 100K 1%
C9 .1UF
R5 15K0 1%
CH2 METER
R25 1K3
R20 620
D13 DL4148
(3mA) -1.8V
-2.4V
Q2 IMBT4403
R11 220
R29 10K
C14 .1UF
SIG-PRES-(2)
R28 24K
U5-D LM339
R27 470K
R16 2K7
R19 2K7
U5-C LM339
D12 GRN SIG-PRES
C16 .1UF
R10 2K7
U5-B LM339
D11 GRN -20dB
R15 7K5
AMP-OUT(2)
R36 442K 1%
R37 100K 1%
D16 DL4148
R38 1K0
3.6V
U5-A LM339
D10 GRN -9dB
R14 3K9
D17 DL4148
U8-A NJM4560M
C21 1UF 50V
U4-B LM339
D9 GRN -6dB
R13 6K2
R40 100K 1%
U4-A LM339
D8 GRN -3dB
R12 120K
+80V
U4-D LM339
D7 RED OVERLOAD
R23 68K1 1%
R21 84K5 1%
R30 470K
R26 100K 1%
U4-C LM339
C15 .1UF
R24 15K0 1%
R22 15K0 1%
TO INPUT BOARD
OUTPUT LEVEL
J1-1
J1-2
J1-3
J1-4
J1-5
J1-6
J1-7
J1-8
J1-9
J1-10
J1-11
J1-12
J1-13
J1-14
J1-15
J1-16
J1-17
J1-18
J1-19
J1-20
LVL-RTN(1)
LVL-RTN(2)
+80V
SIG-PRES-(1)
SIG-PRES-(2)
+16V
-16V
OVERTEMP
MUTE-(1)
MUTE-(2)
SOA-FLT(1)
SOA-FLT(2)
AMP-OUT(1)
AMP-OUT(2)
U1-A NJM4560M
C3 47UF 25V
R1 2K2
R2 5KB CH1
U1-B NJM4560M
C17 47UF 25V
R31 2K2
R32 5KB CH2
+16V
C2 10UF 50V
C1 10UF 50V
C22 .01
C23 .01
C10 .01
C20 .01
C19 .01
C6 .01
C13 .01
C11 .01
C5 .01
C4 .01
U5-E
U4-E
U3-E
U2-E
U7-E
U6-C
U1-C
LM339
LM339
LM339
LM339
LM339
NJM4560M
NJM4560M

☐ 706-033-08
STDF SWAGE NO.4 X .665

☐ 450-254-00
PCB, DISPLAY, M1400 S2

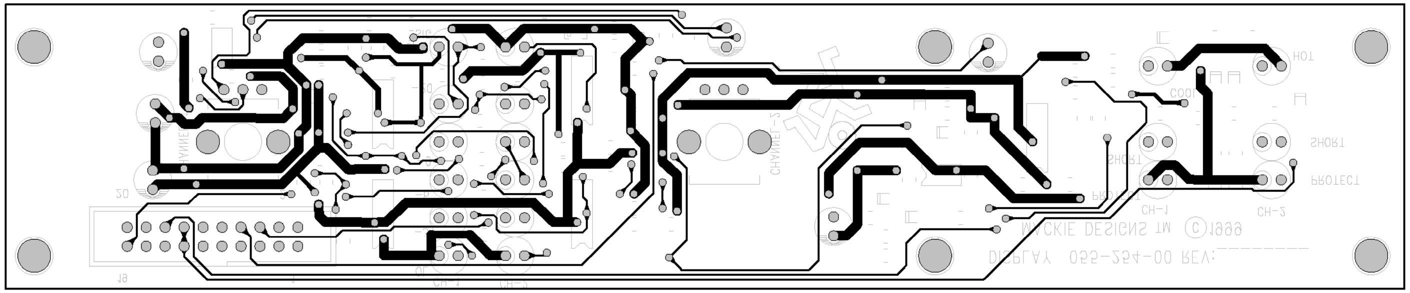
~~UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:~~
~~FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA~~
~~MATERIAL: SEE NOTES~~
~~FINISH: SEE NOTES~~
DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN:	trh	2-9-99
CHECKED:		
NP ENG:		
MATERIAL:		
MFG:		
MFG ENG:		
ISSUED:		

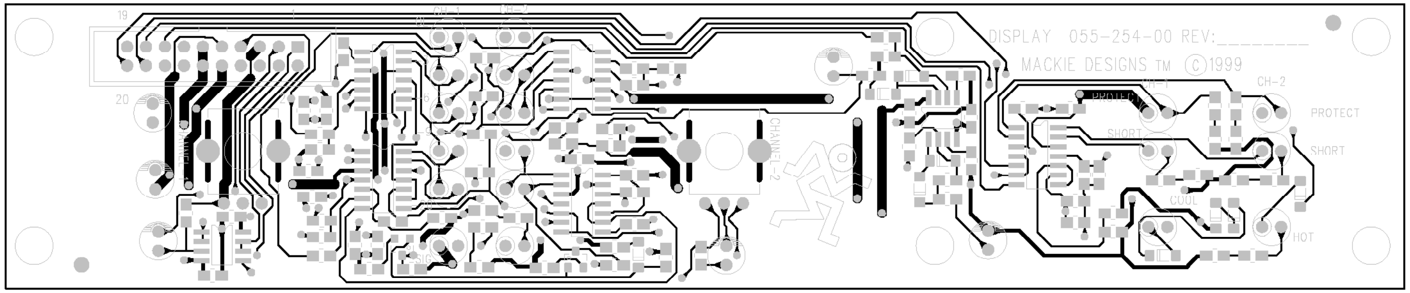
MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC, DISPLAY, M1400 S2

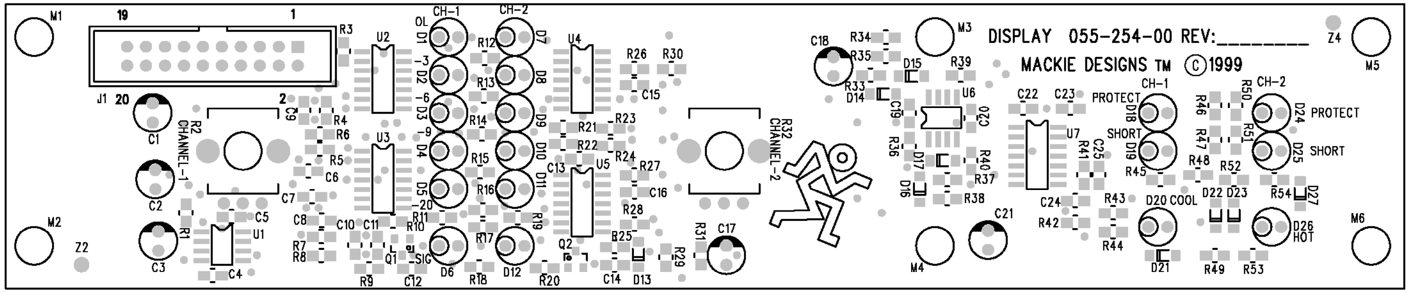
SIZE D SCALE: NONE DWG. NO. 990-254-00 REV. A
DWG FILE: SHEET 1 OF 1


HOT
SHORT
PROTECT
CH-1
CH-2
MACKIE DESIGNS TM ©1999
DISPLAY 055-254-00 REV:________
CHANNEL-2
J1

Solder side
traces and pads


DISPLAY 055-254-00 REV:________
MACKIE DESIGNS TM ©1999
CH-2
PROTECT
SHORT
COOL
HOT
CHANNEL-2
19
20

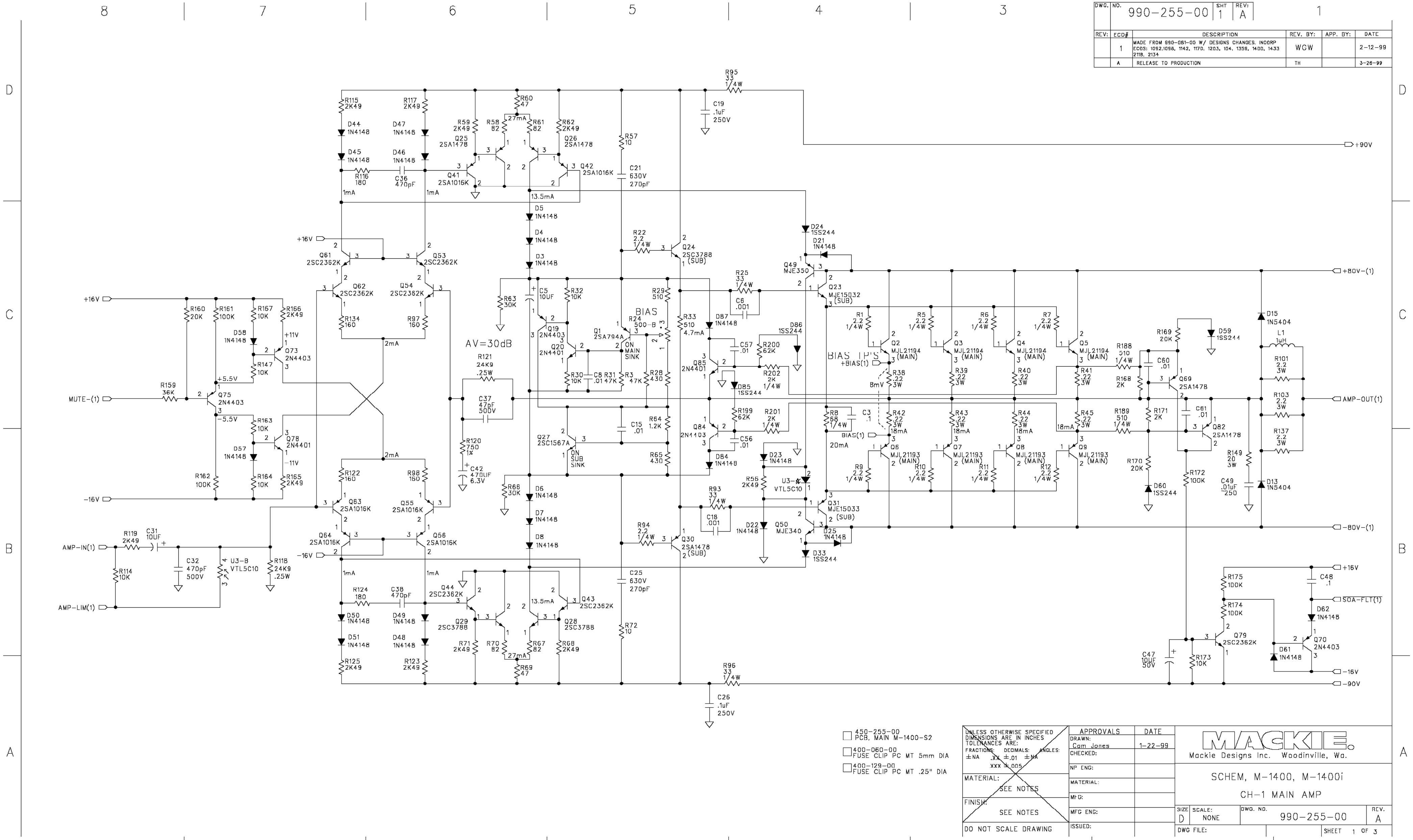
Component side
traces and pads


M1
19
1
J1
20
2
C1
C2
C3
CHANNEL-1
U1
U2
U3
U4
U5
U6
U7
CH-1
CH-2
OL
-3
-6
-9
-20
SIG
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
Q1
Q2
CHANNEL-2
M2
M3
M4
M5
M6
Z2
Z4
DISPLAY 055-254-00 REV:________
MACKIE DESIGNS TM ©1999
PROTECT
SHORT
COOL
HOT
D20
D21
D22
D23
D24
D25
D26
D27

Component side

DWG.	NO. 990-255-00	SHT 1	REV: A

REV:	ECO#	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-081-00 W/ DESIGNS CHANGES. INCORP ECOS: 1092,1098, 1142, 1170, 1203, 104, 1359, 1400, 1433 2118, 2134	WGW		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99



8
7
6
5
4
3
2
1
D
C
B
A
+16V
-16V
MUTE-(1)
AMP-IN(1)
AMP-LIM(1)
+90V
-90V
+80V-(1)
-80V-(1)
AMP-OUT(1)
SOA-FLT(1)
AV=30dB
BIAS
BIAS TP'S
+BIAS(1)
BIAS(1)
8mV
20mA
18mA
13.5mA
27mA
2mA
1mA
4.7mA
+5.5V
-5.5V
+11V
-11V
ON MAIN SINK
ON SUB SINK
Q1 2SA794A
Q2 MJL21194 (MAIN)
Q3 MJL21194 (MAIN)
Q4 MJL21194 (MAIN)
Q5 MJL21194 (MAIN)
Q6 MJL21193 (MAIN)
Q7 MJL21193 (MAIN)
Q8 MJL21193 (MAIN)
Q9 MJL21193 (MAIN)
Q19 2N4403
Q20 2N4401
Q23 MJE15032 (SUB)
Q24 2SC3788 (SUB)
Q25 2SA1478
Q26 2SA1478
Q27 2SC1567A
Q28 2SC3788
Q29 2SC3788
Q30 2SA1478 (SUB)
Q31 MJE15033 (SUB)
Q41 2SA1016K
Q42 2SA1016K
Q43 2SC2362K
Q44 2SC2362K
Q49 MJE350
Q50 MJE340
Q53 2SC2362K
Q54 2SC2362K
Q55 2SA1016K
Q56 2SA1016K
Q61 2SC2362K
Q62 2SC2362K
Q63 2SA1016K
Q64 2SA1016K
Q69 2SA1478
Q70 2N4403
Q73 2N4403
Q75 2N4403
Q78 2N4401
Q79 2SC2362K
Q82 2SA1478
Q84 2N4403
Q85 2N4401
U3-A VTL5C10
U3-B VTL5C10
L1 1uH
R24 500-B
R95 33 1/4W
R96 33 1/4W
C19 .1uF 250V
C26 .1uF 250V
C21 630V 270pF
C25 630V 270pF
C37 47pF 500V
C42 470UF 6.3V
C31 10UF
C32 470pF 500V
R121 24K9 .25W
R118 24K9 .25W
D15 1N5404
D13 1N5404

☐ 450-255-00
PCB, MAIN M-1400-S2

☐ 400-060-00
FUSE CLIP PC MT 5mm DIA

☐ 400-129-00
FUSE CLIP PC MT .25" DIA

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA

MATERIAL: SEE NOTES

FINISH: SEE NOTES

DO NOT SCALE DRAWING

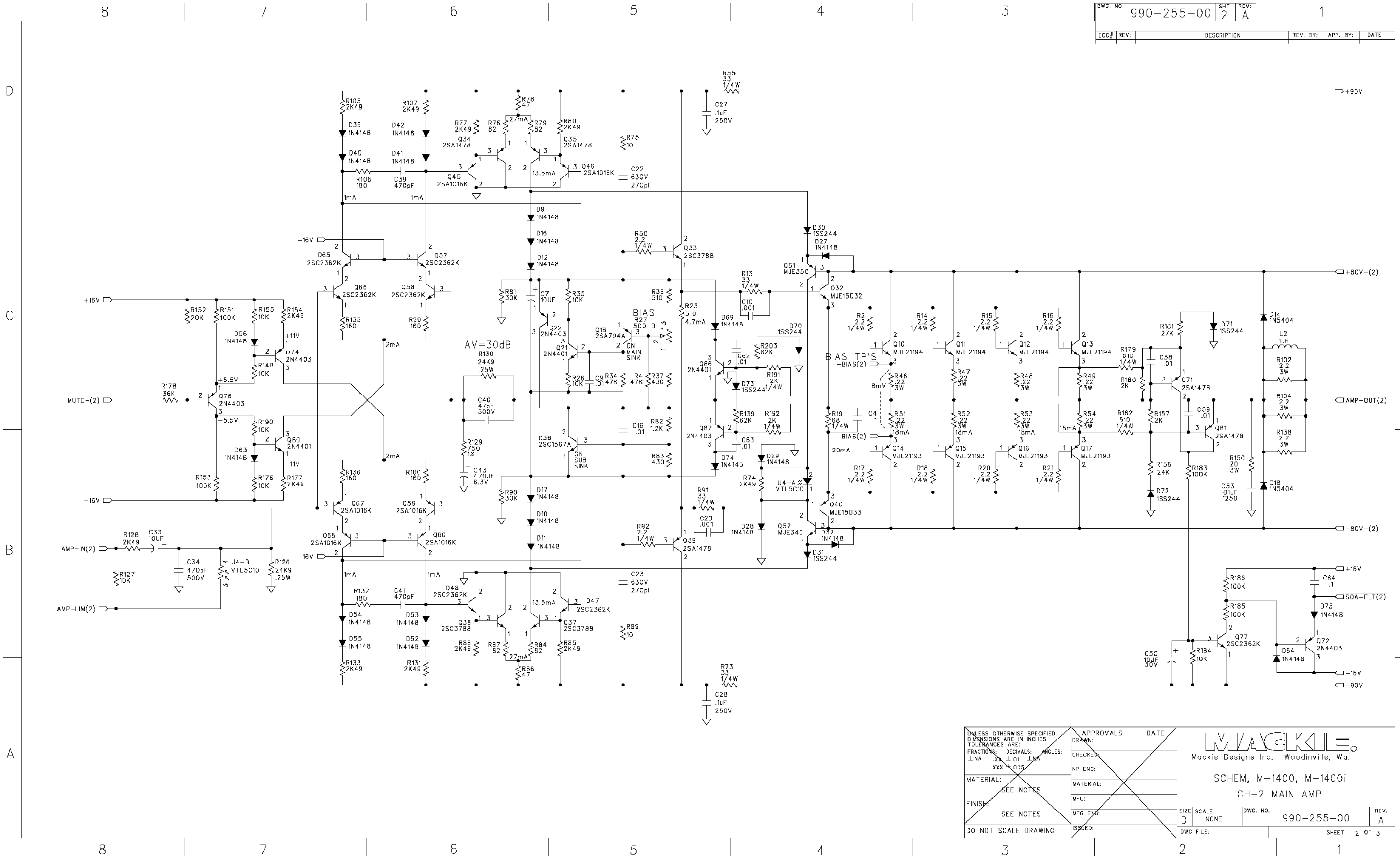
APPROVALS	DATE
DRAWN: Cam Jones	1-22-99
CHECKED:	
NP ENG:	
MATERIAL:	
MFG:	
MFG ENG:	
ISSUED:	

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i

CH-1 MAIN AMP

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-255-00	A
DWG FILE:		SHEET 1 OF 3	


DWG. NO. 990-255-00 SHT 2 REV. A
ECO# REV. DESCRIPTION REV. BY: APP. BY: DATE
+90V
+80V-(2)
-80V-(2)
-90V
+16V
-16V
MUTE-(2)
AMP-IN(2)
AMP-LIM(2)
AMP-OUT(2)
SOA-FLT(2)
AV=30dB
BIAS
BIAS TP'S
+BIAS(2)
BIAS(2)
ON MAIN SINK
ON SUB SINK
U4-A VTL5C10
U4-B VTL5C10
L2 1uH
Q10 MJL21194
Q11 MJL21194
Q12 MJL21194
Q13 MJL21194
Q14 MJL21193
Q15 MJL21193
Q16 MJL21193
Q17 MJL21193
Q32 MJE15032
Q40 MJE15033
Q51 MJE350
Q52 MJE340
Q18 2SA794A
Q36 2SC1567A
Q33 2SC3788
Q39 2SA1478
R27 500-B
13.5mA
27mA
2mA
1mA
18mA
20mA
8mV
4.7mA

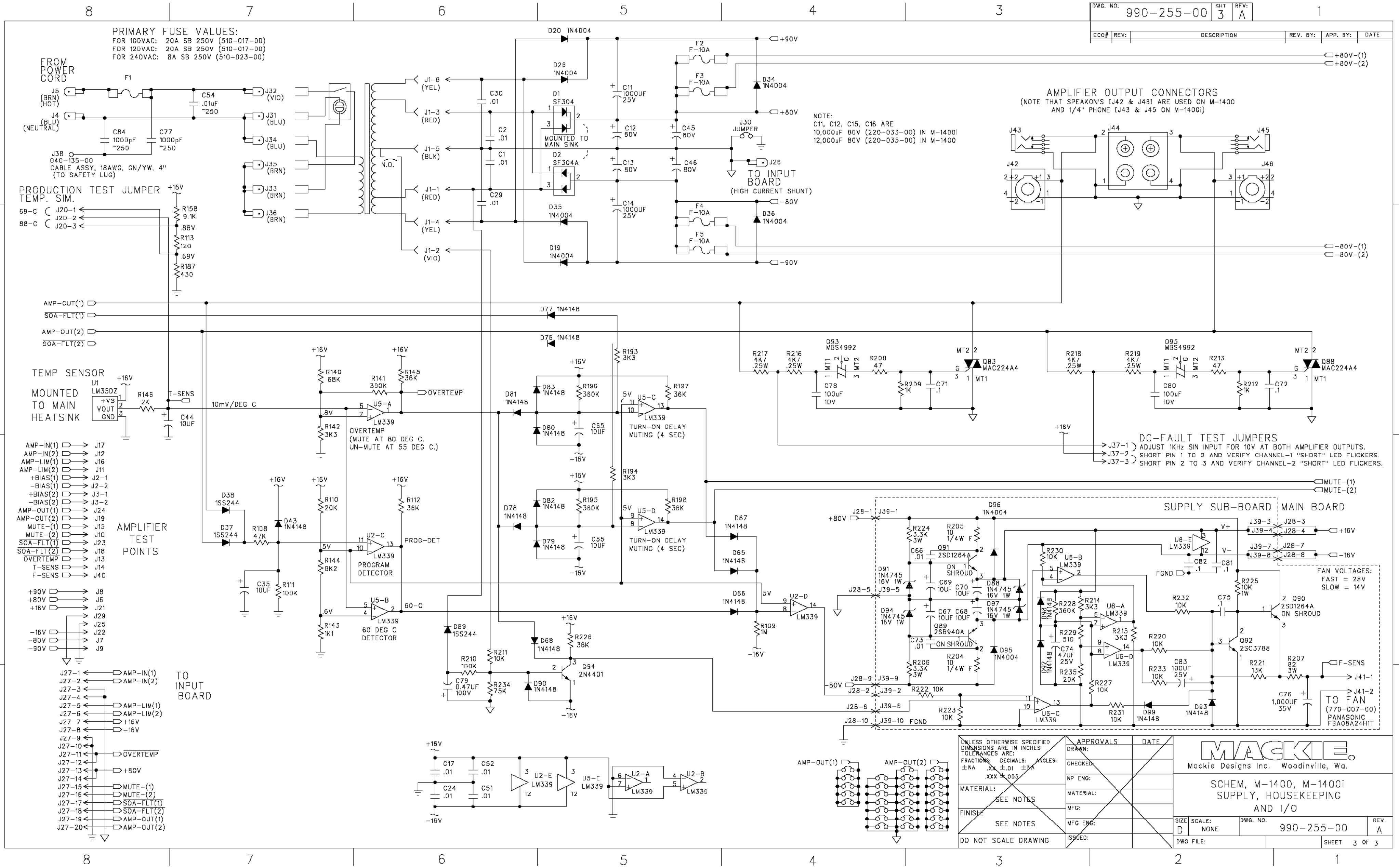
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

APPROVALS | DATE
DRAWN:
CHECKED:
NP ENG:
MATERIAL:
MFG:
MFG ENG:
ISSUED:

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i
CH-2 MAIN AMP

SIZE D SCALE: NONE DWG. NO. 990-255-00 REV. A
DWG FILE: SHEET 2 OF 3



DWG. NO. 990-255-00 SHT 3 REV: A
ECO# REV: DESCRIPTION REV. BY: APP. BY: DATE
PRIMARY FUSE VALUES:
FOR 100VAC: 20A SB 250V (510-017-00)
FOR 120VAC: 20A SB 250V (510-017-00)
FOR 240VAC: 8A SB 250V (510-023-00)
FROM POWER CORD
J5 (BRN) (HOT)
J4 (BLU) (NEUTRAL)
F1
C54 .01uF ~250
C84 1000pF ~250
C77 1000pF ~250
J38 040-135-00 CABLE ASSY, 18AWG, GN/YW, 4" (TO SAFETY LUG)
J32 (VIO)
J31 (BLU)
J34 (BLU)
J35 (BRN)
J33 (BRN)
J36 (BRN)
N.O.
J1-6 (YEL)
J1-3 (RED)
J1-5 (BLK)
J1-1 (RED)
J1-4 (YEL)
J1-2 (VIO)
C30 .01
C2 .01
C1 .01
C29 .01
D20 1N4004
D26 1N4004
D1 SF304
D2 SF304A
MOUNTED TO MAIN SINK
D35 1N4004
D19 1N4004
C11 1000UF 25V
C12 80V
C13 80V
C14 1000UF 25V
C45 80V
C46 80V
F2 F-10A
F3 F-10A
F4 F-10A
F5 F-10A
D34 1N4004
D36 1N4004
+90V
+80V
-80V
-90V
J30 JUMPER
J26 TO INPUT BOARD (HIGH CURRENT SHUNT)
NOTE:
C11, C12, C15, C16 ARE
10,000uF 80V (220-033-00) IN M-1400i
12,000uF 80V (220-035-00) IN M-1400
+80V-(1)
+80V-(2)
-80V-(1)
-80V-(2)
AMPLIFIER OUTPUT CONNECTORS
(NOTE THAT SPEAKON'S [J42 & J46] ARE USED ON M-1400
AND 1/4" PHONE [J43 & J45 ON M-1400i)
J43 J44 J45 J42 J46
PRODUCTION TEST JUMPER
TEMP. SIM.
69-C J20-1
88-C J20-2
J20-3
R158 9.1K
.88V
R113 120
.69V
R187 430
AMP-OUT(1)
SOA-FLT(1)
AMP-OUT(2)
SOA-FLT(2)
D77 1N4148
D76 1N4148
R193 3K3
TEMP SENSOR MOUNTED TO MAIN HEATSINK
U1 LM35DZ
+VS VOUT GND
R146 2K
T-SENS
C44 10UF
10mV/DEG C
R140 68K
R141 390K
R145 36K
OVERTEMP
.8V
U5-A LM339
R142 3K3
OVERTEMP (MUTE AT 80 DEG C. UN-MUTE AT 55 DEG C.)
D81 1N4148
D83 1N4148
R196 360K
D80 1N4148
C65 10UF
R197 36K
U5-C LM339
TURN-ON DELAY MUTING (4 SEC)
R194 3K3
D82 1N4148
R195 360K
D78 1N4148
D79 1N4148
C55 10UF
R198 36K
U5-D LM339
TURN-ON DELAY MUTING (4 SEC)
DC-FAULT TEST JUMPERS
J37-1 ADJUST 1KHz SIN INPUT FOR 10V AT BOTH AMPLIFIER OUTPUTS.
J37-2 SHORT PIN 1 TO 2 AND VERIFY CHANNEL-1 "SHORT" LED FLICKERS.
J37-3 SHORT PIN 2 TO 3 AND VERIFY CHANNEL-2 "SHORT" LED FLICKERS.
R217 4K7 .25W
R216 4K7 .25W
D93 MBS4992
R208 47
Q83 MAC224A4
C78 100uF 10V
R209 1K
C71 .1
R218 4K7 .25W
R219 4K7 .25W
D95 MBS4992
R213 47
Q88 MAC224A4
C80 100uF 10V
R212 1K
C72 .1
AMPLIFIER TEST POINTS
AMP-IN(1) J17
AMP-IN(2) J12
AMP-LIM(1) J16
AMP-LIM(2) J11
+BIAS(1) J2-1
-BIAS(1) J2-2
+BIAS(2) J3-1
-BIAS(2) J3-2
AMP-OUT(1) J24
AMP-OUT(2) J19
MUTE-(1) J15
MUTE-(2) J10
SOA-FLT(1) J23
SOA-FLT(2) J18
OVERTEMP J13
T-SENS J14
F-SENS J40
+90V J8
+80V J6
+16V J21
J29
J25
-16V J22
-80V J7
-90V J9
D38 1SS244
D37 1SS244
R108 47K
D43 1N4148
C35 10UF
R111 100K
R110 20K
R112 36K
U2-C LM339
PROGRAM DETECTOR
PROG-DET
R144 8K2
U5-B LM339
60 DEG C DETECTOR
60-C
R143 1K1
D89 1SS244
R210 100K
C79 0.47UF 100V
R211 10K
R234 75K
D68 1N4148
R226 36K
Q94 2N4401
D90 1N4148
MUTE-(1)
MUTE-(2)
D67 1N4148
D65 1N4148
D66 1N4148
U2-D LM339
R109 1M
SUPPLY SUB-BOARD
MAIN BOARD
J28-1 J39-1
R224 3.3K 3W
R205 10 1/4W F
D96 1N4004
Q91 2SD1264A ON SHROUD
C66 .01
D91 1N4745 16V 1W
C69 10UF
C70 10UF
D88 1N4745 16V 1W
D97 1N4745 16V 1W
D94 1N4745 16V 1W
C67 10UF
C68 10UF
Q89 2SB940A ON SHROUD
C73 .01
R206 3.3K 3W
R204 10 1/4W F
D95 1N4004
J28-5 J39-5
J28-9 J39-9
J28-2 J39-2
J28-6 J39-6
J28-10 J39-10 FGND
R222 10K
R223 10K
U6-C LM339
R230 10K
U6-B LM339
D98 1N4148
R228 360K
R214 3K3
U6-A LM339
R229 510
C74 47UF 25V
D92 1N4148
R235 20K
R215 3K3
U6-D LM339
R227 10K
R231 10K
D99 1N4148
R232 10K
C75 .1
R220 10K
R233 10K
C83 100UF 25V
D93 1N4148
U6-E LM339
C82 .1
C81 .1
J39-3 J28-3
J39-4 J28-4
J39-7 J28-7
J39-8 J28-8
+16V
-16V
FGND
FAN VOLTAGES: FAST = 28V SLOW = 14V
R225 10K 1W
Q90 2SD1264A ON SHROUD
Q92 2SC3788
R221 13K
R207 82 3W
F-SENS
J41-1
J41-2
C76 1,000UF 35V
TO FAN (770-007-00) PANASONIC FBA08A24H1T
J27-1 AMP-IN(1)
J27-2 AMP-IN(2)
J27-3
J27-4
J27-5 AMP-LIM(1)
J27-6 AMP-LIM(2)
J27-7 +16V
J27-8 -16V
J27-9
J27-10
J27-11 OVERTEMP
J27-12
J27-13 +80V
J27-14
J27-15 MUTE-(1)
J27-16 MUTE-(2)
J27-17 SOA-FLT(1)
J27-18 SOA-FLT(2)
J27-19 AMP-OUT(1)
J27-20 AMP-OUT(2)
TO INPUT BOARD
C17 .01
C52 .01
C24 .01
C51 .01
U2-E LM339
U5-E LM339
U2-A LM339
U2-B LM339
AMP-OUT(1)
AMP-OUT(2)
8 7 6 5 4 3 2 1
D C B A

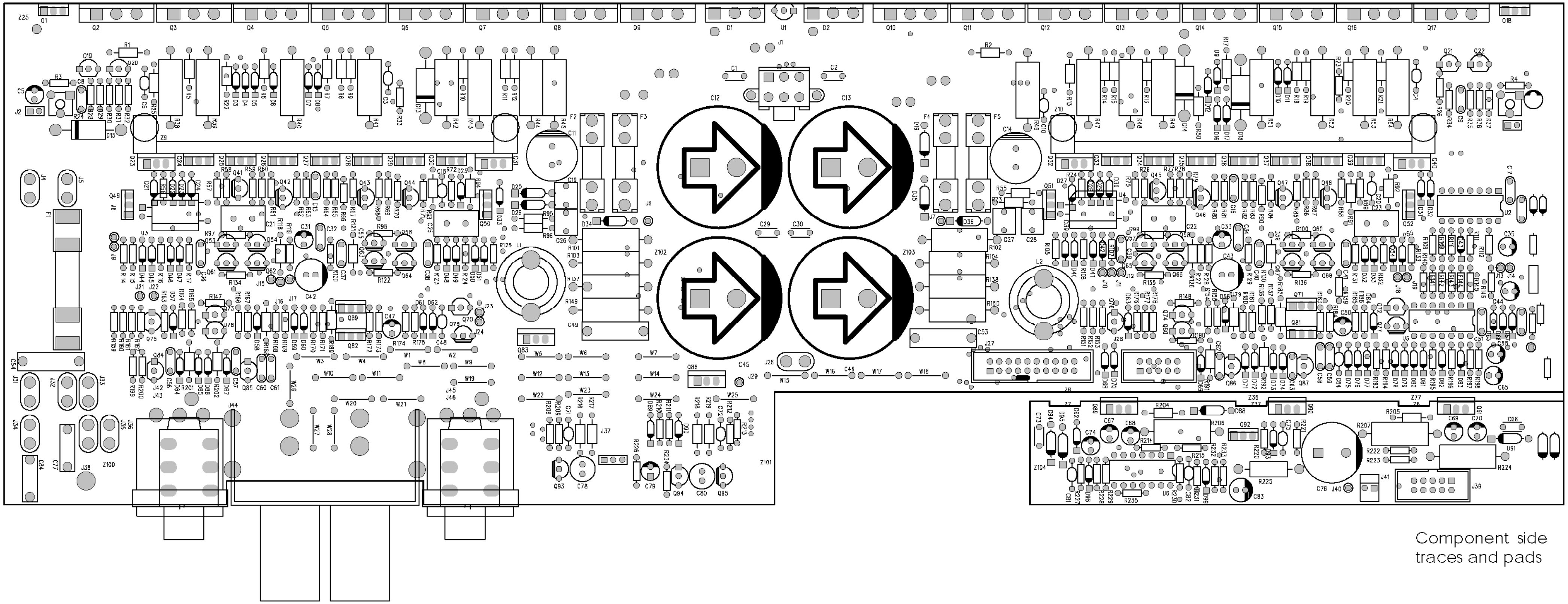
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

APPROVALS DATE
DRAWN:
CHECKED:
NP ENG:
MATERIAL:
MFG:
MFG ENG:
ISSUED:

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

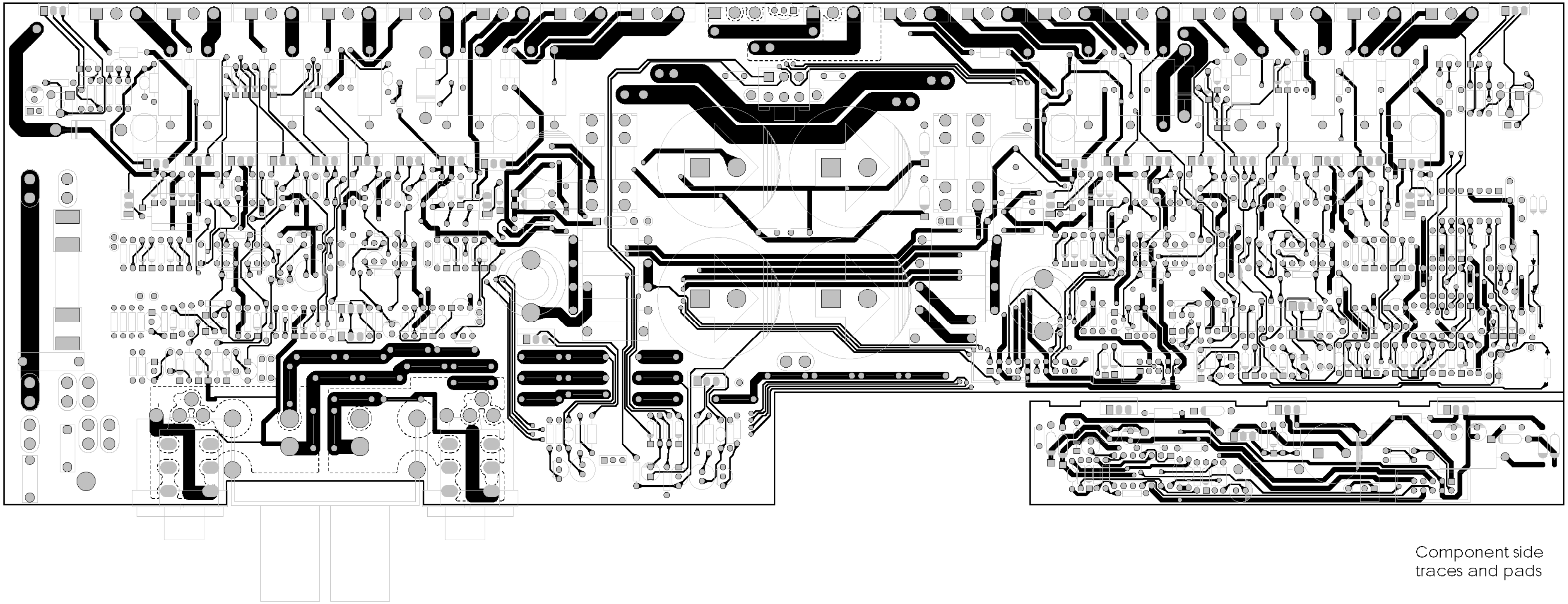
SCHEM, M-1400, M-1400i
SUPPLY, HOUSEKEEPING
AND I/O

SIZE D SCALE: NONE DWG. NO. 990-255-00 REV. A
DWG FILE: SHEET 3 OF 3

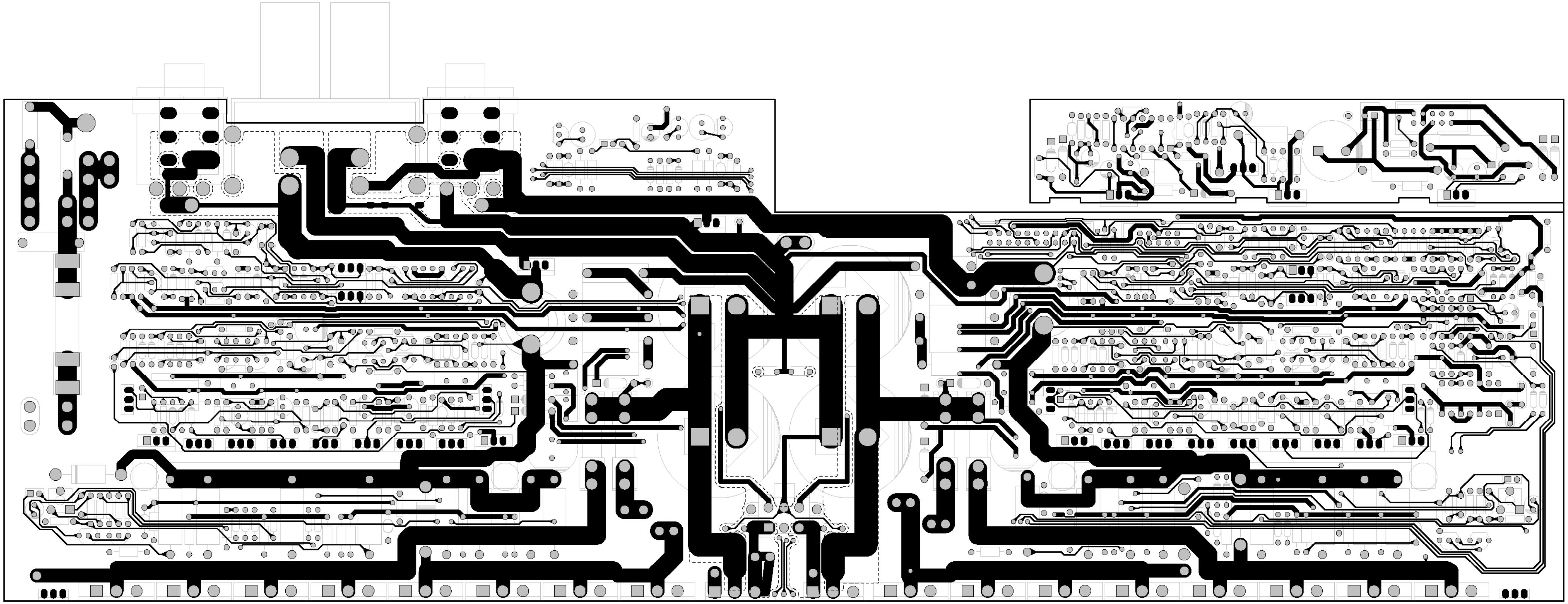

Z25
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
D1
U1
D2
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
J1
C1
C2
C12
C13
F1
F2
F3
F4
F5
Z102
Z103
Z101
J27
J44
J39

Component side
traces and pads

MACKIE.	M1400, M1400i series 2	©2000 All rights reserved, Mackie Designs Inc.	AMPLIFIER BOARD		255-4



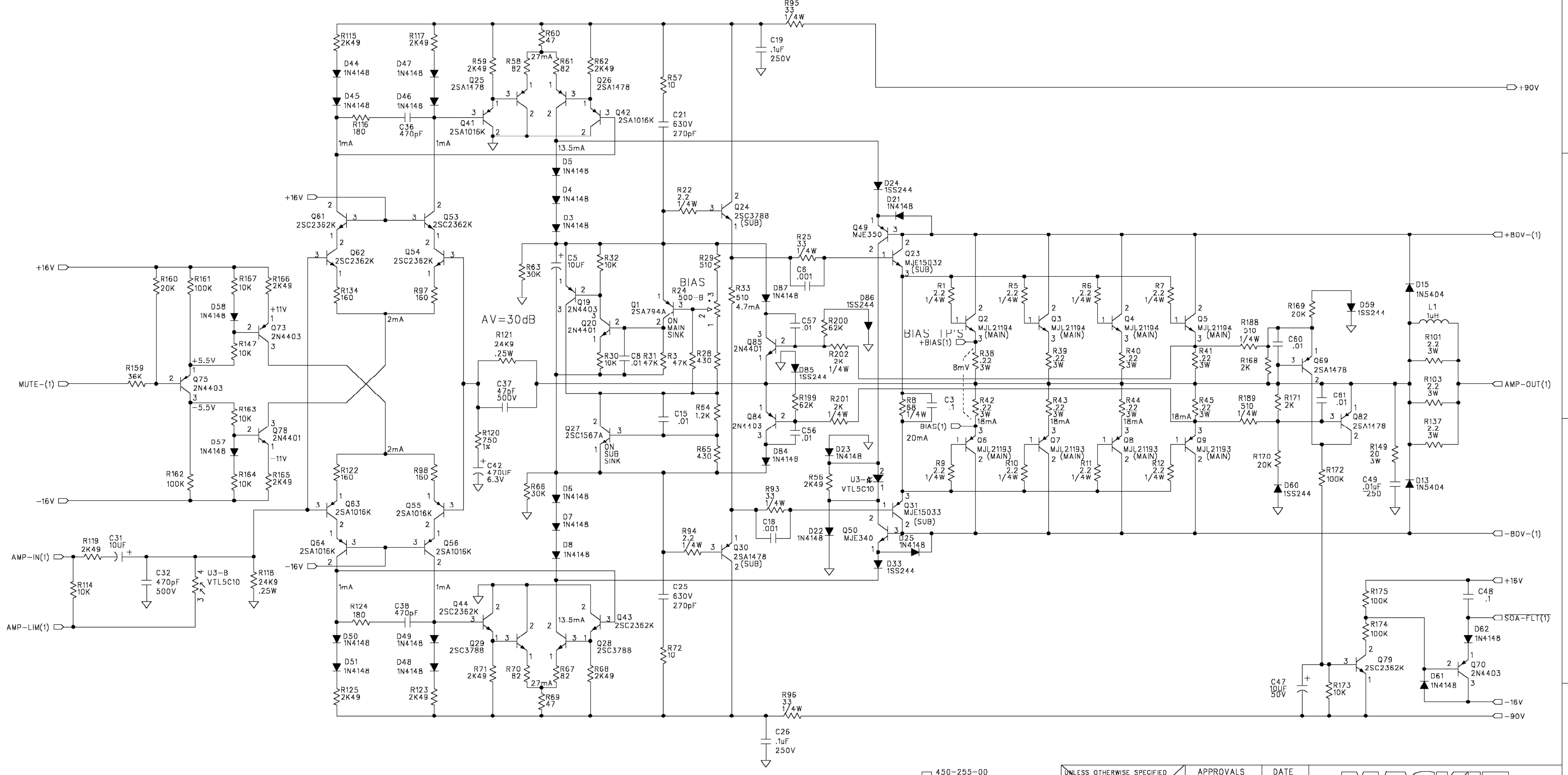
Component side
traces and pads



Solder side
traces and pads

DWG. NO.	990-255-00	SHT 1	REV. A

REV:	ECO#	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-081-00 W/ DESIGNS CHANGES, INCORP ECOS: 1092,1098, 1142, 1170, 1203, 104, 1359, 1400, 1433 2118, 2134	WCW		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99



+90V
+80V-(1)
AMP-OUT(1)
-80V-(1)
+16V
SOA-FLT(1)
-16V
-90V
+16V
MUTE-(1)
-16V
AMP-IN(1)
AMP-LIM(1)
R95 33 1/4W
C19 .1uF 250V
R115 2K49
R117 2K49
D44 1N4148
D47 1N4148
D45 1N4148
D46 1N4148
R116 180
C36 470pF
1mA
1mA
R59 2K49
R58 82
R60 47
27mA
R61 82
R62 2K49
Q25 2SA1478
Q26 2SA1478
Q41 2SA1016K
Q42 2SA1016K
13.5mA
D5 1N4148
D4 1N4148
D3 1N4148
R57 10
C21 630V 270pF
R22 2.2 1/4W
Q24 2SC3788 (SUB)
D24 1SS244
D21 1N4148
Q49 MJE350
Q23 MJE15032 (SUB)
R25 33 1/4W
C6 .001
Q61 2SC2362K
Q53 2SC2362K
Q62 2SC2362K
Q54 2SC2362K
R134 160
R97 160
2mA
R160 20K
R161 100K
R167 10K
R166 2K49
D58 1N4148
+11V
Q73 2N4403
R147 10K
+5.5V
R159 36K
Q75 2N4403
-5.5V
R163 10K
Q78 2N4401
D57 1N4148
-11V
R162 100K
R164 10K
R165 2K49
R63 30K
C5 10UF
R32 10K
Q19 2N4403
Q20 2N4401
R30 10K
C8 .01
R31 47K
Q1 2SA794A
BIAS
R24 500-B
ON MAIN SINK
R3 47K
R28 430
R29 510
R33 510
4.7mA
D87 1N4148
C57 .01
R200 62K
D86 1SS244
Q85 2N4401
R202 2K 1/4W
D85 1SS244
R199 62K
R201 2K 1/4W
C56 .01
Q84 2N4403
D84 1N4148
AV=30dB
R121 24K9 .25W
C37 47pF 500V
R120 750 1%
C42 470UF 6.3V
Q27 2SC1567A
ON SUB SINK
C15 .01
R64 1.2K
R65 430
2mA
R122 160
R98 160
Q63 2SA1016K
Q55 2SA1016K
Q64 2SA1016K
Q56 2SA1016K
R66 30K
D6 1N4148
D7 1N4148
D8 1N4148
R119 2K49
C31 10UF
C32 470pF 500V
U3-B VTL5C10
R118 24K9 .25W
R114 10K
R124 180
C38 470pF
1mA
1mA
D50 1N4148
D49 1N4148
D51 1N4148
D48 1N4148
Q44 2SC2362K
Q43 2SC2362K
Q29 2SC3788
Q28 2SC3788
13.5mA
R125 2K49
R123 2K49
R71 2K49
R70 82
27mA
R67 82
R68 2K49
R69 47
C25 630V 270pF
R72 10
R96 33 1/4W
C26 .1uF 250V
R94 2.2 1/4W
Q30 2SA1478 (SUB)
R93 33 1/4W
C18 .001
D22 1N4148
Q50 MJE340
D23 1N4148
R56 2K49
U3-A VTL5C10
Q31 MJE15033 (SUB)
D25 1N4148
D33 1SS244
BIAS TP'S
+BIAS(1)
BIAS(1)
8mV
20mA
18mA
R1 2.2 1/4W
R5 2.2 1/4W
R6 2.2 1/4W
R7 2.2 1/4W
Q2 MJL21194 (MAIN)
Q3 MJL21194 (MAIN)
Q4 MJL21194 (MAIN)
Q5 MJL21194 (MAIN)
R38 .22 3W
R39 .22 3W
R40 .22 3W
R41 .22 3W
R42 .22 3W
R43 .22 3W
R44 .22 3W
R45 .22 3W
R8 68 1/4W
C3 .1
Q6 MJL21193 (MAIN)
Q7 MJL21193 (MAIN)
Q8 MJL21193 (MAIN)
Q9 MJL21193 (MAIN)
R9 2.2 1/4W
R10 2.2 1/4W
R11 2.2 1/4W
R12 2.2 1/4W
R188 510 1/4W
R168 2K
R169 20K
D59 1SS244
C60 .01
Q69 2SA1478
R189 510 1/4W
R171 2K
C61 .01
Q82 2SA1478
R170 20K
D60 1SS244
R172 100K
D15 1N5404
L1 1uH
R101 2.2 3W
R103 2.2 3W
R137 2.2 3W
R149 20 3W
C49 .01uF 250
D13 1N5404
R175 100K
C48 .1
R174 100K
D62 1N4148
Q79 2SC2362K
Q70 2N4403
D61 1N4148
C47 10UF 50V
R173 10K

☐ 450-255-00 PCB, MAIN M-1400-S2
☐ 400-060-00 FUSE CLIP PC MT .5mm DIA
☐ 400-129-00 FUSE CLIP PC MT .25" DIA

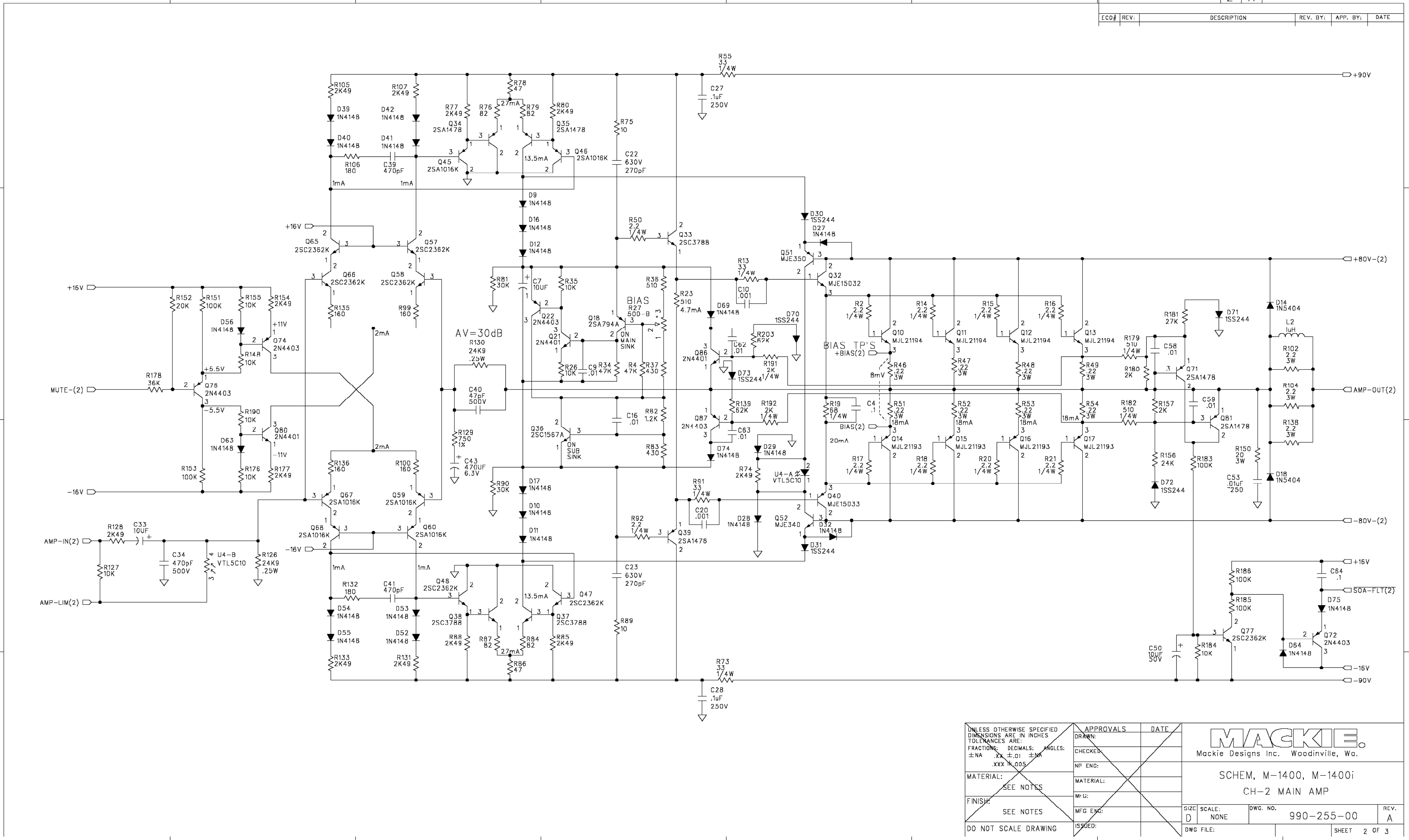
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS: ±NA
DECIMALS: .XX ±.01 .XXX ±.005
ANGLES: ±NA
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

APPROVALS	DATE
DRAWN: Cam Jones	1-22-99
CHECKED:	
NP ENG:	
MATERIAL:	
MFG:	
MFG ENG:	
ISSUED:	

MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i
CH-1 MAIN AMP

SIZE: D
SCALE: NONE
DWG. NO. 990-255-00
REV. A
DWG FILE:
SHEET 1 OF 3


+16V
MUTE-(2)
-16V
AMP-IN(2)
AMP-LIM(2)
R152 20K
R151 100K
R155 10K
R154 2K49
D56 1N4148
R148 10K
Q74 2N4403
+11V
+5.5V
R178 36K
Q78 2N4403
-5.5V
R190 10K
Q80 2N4401
D63 1N4148
-11V
R153 100K
R176 10K
R177 2K49
R128 2K49
C33 10UF
R127 10K
C34 470pF 500V
U4-B VTL5C10
R126 24K9 .25W
R105 2K49
D39 1N4148
D40 1N4148
R106 180
C39 470pF
R107 2K49
D42 1N4148
D41 1N4148
1mA
Q65 2SC2362K
Q57 2SC2362K
Q66 2SC2362K
Q58 2SC2362K
R135 160
R99 160
2mA
R136 160
R100 160
Q67 2SA1016K
Q59 2SA1016K
Q68 2SA1016K
Q60 2SA1016K
R132 180
C41 470pF
D54 1N4148
D55 1N4148
D53 1N4148
D52 1N4148
R133 2K49
R131 2K49
R77 2K49
Q34 2SA1478
R76 82
R78 47
27mA
R79 82
R80 2K49
Q35 2SA1478
Q45 2SA1016K
Q46 2SA1016K
13.5mA
Q48 2SC2362K
Q38 2SC3788
Q47 2SC2362K
Q37 2SC3788
R88 2K49
R87 82
R84 82
R85 2K49
R86 47
D9 1N4148
D16 1N4148
D12 1N4148
D17 1N4148
D10 1N4148
D11 1N4148
AV=30dB
R130 24K9 .25W
C40 47pF 500V
R129 750 1%
C43 470UF 6.3V
R81 30K
R90 30K
C7 10UF
R35 10K
Q22 2N4403
Q21 2N4401
R26 10K
C9 .0147
R34 47K
Q18 2SA794A
BIAS
R27 500-B
ON MAIN SINK
R4 47K
R37 430
R36 510
R82 1.2K
R83 430
C16 .01
Q36 2SC1567A
ON SUB SINK
R75 10
C22 630V 270pF
C23 630V 270pF
R89 10
R50 2.2 1/4W
Q33 2SC3788
R92 2.2 1/4W
Q39 2SA1478
R23 510
4.7mA
R55 33 1/4W
C27 .1uF 250V
R73 33 1/4W
C28 .1uF 250V
+90V
-90V
D69 1N4148
Q86 2N4401
C62 .01
D73 1SS244
R139 62K
Q87 2N4403
C63 .01
D74 1N4148
R203 62K
R191 2K 1/4W
R192 2K 1/4W
D70 1SS244
D29 1N4148
R74 2K49
U4-A VTL5C10
D28 1N4148
R13 33 1/4W
C10 .001
R91 33 1/4W
C20 .001
D30 1SS244
D27 1N4148
Q51 MJE350
Q32 MJE15032
Q52 MJE340
Q40 MJE15033
D32 1N4148
D31 1SS244
BIAS TP'S
+BIAS(2)
BIAS(2)
8mV
20mA
R19 68 1/4W
C4 .1
+80V-(2)
-80V-(2)
R2 2.2 1/4W
R14 2.2 1/4W
R15 2.2 1/4W
R16 2.2 1/4W
Q10 MJL21194
Q11 MJL21194
Q12 MJL21194
Q13 MJL21194
R46 .22 3W
R47 .22 3W
R48 .22 3W
R49 .22 3W
R51 .22 3W
R52 .22 3W
R53 .22 3W
R54 .22 3W
18mA
Q14 MJL21193
Q15 MJL21193
Q16 MJL21193
Q17 MJL21193
R17 2.2 1/4W
R18 2.2 1/4W
R20 2.2 1/4W
R21 2.2 1/4W
R179 510 1/4W
R180 2K
R182 510 1/4W
R157 2K
C58 .01
R181 27K
D71 1SS244
Q71 2SA1478
C59 .01
Q81 2SA1478
R156 24K
D72 1SS244
R183 100K
R150 20 3W
C53 .01uF 250
D14 1N5404
L2 1uH
R102 2.2 3W
R104 2.2 3W
R138 2.2 3W
D18 1N5404
AMP-OUT(2)
+16V
C64 .1
SOA-FLT(2)
R186 100K
R185 100K
D75 1N4148
Q77 2SC2362K
Q72 2N4403
D64 1N4148
C50 10UF 50V
R184 10K
-16V
-90V
8
7
6
5
4
3
2
1
D
C
B
A

DWG. NO. 990-255-00 SHT 2 REV. A

ECO#	REV.	DESCRIPTION	REV. BY:	APP. BY:	DATE

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA

MATERIAL: SEE NOTES

FINISH: SEE NOTES

DO NOT SCALE DRAWING

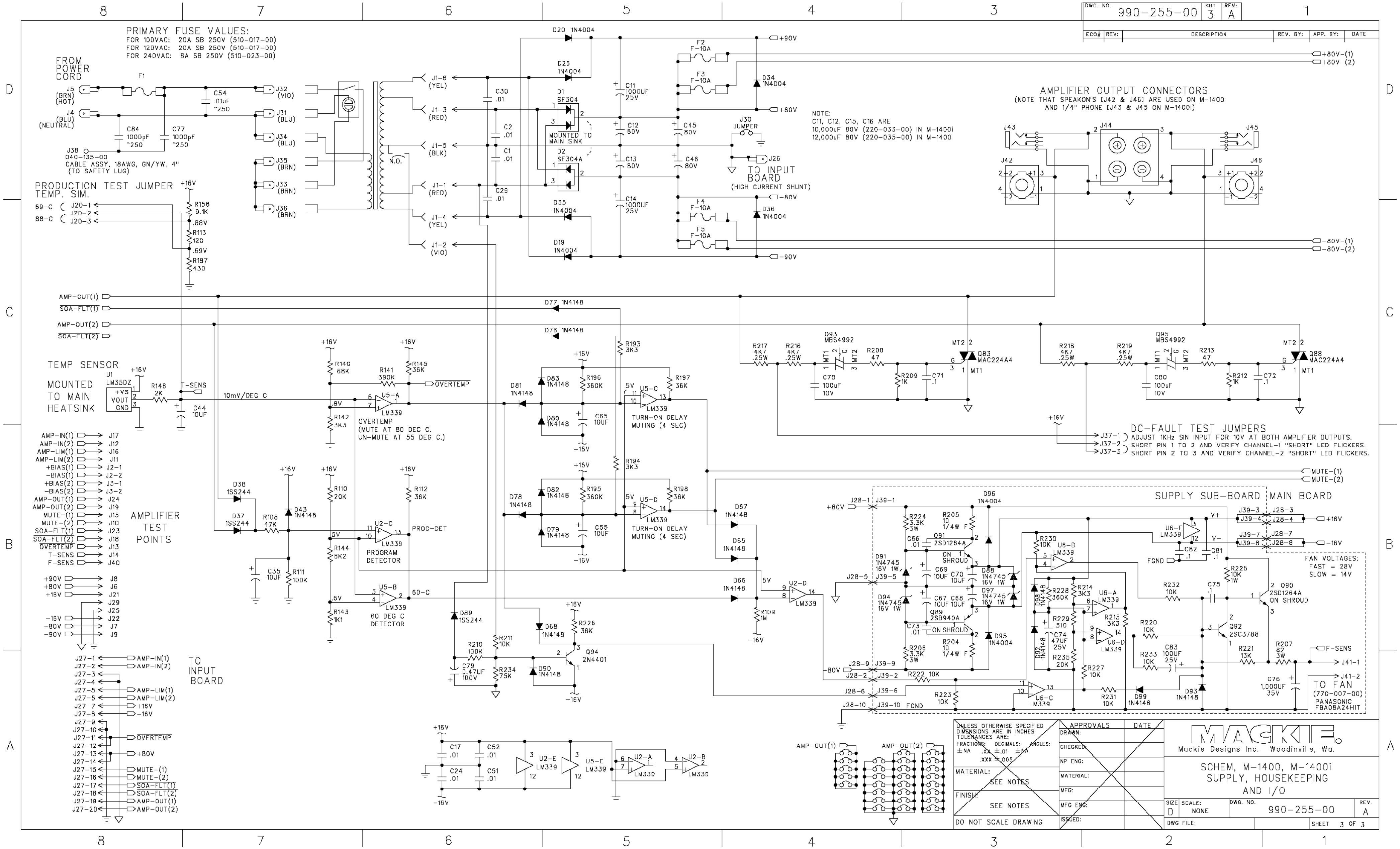
APPROVALS	DATE
DRAWN:	
CHECKED:	
NP ENG:	
MATERIAL:	
MFG:	
MFG ENG:	
ISSUED:	

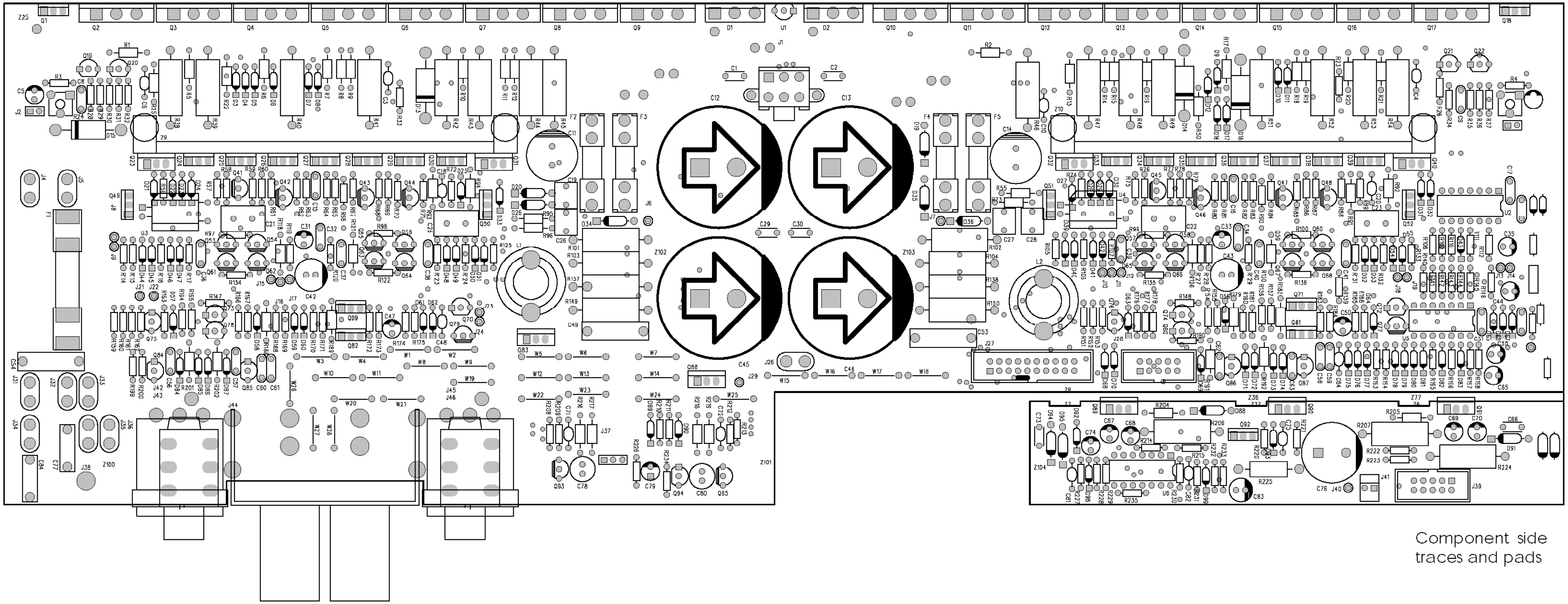
MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, M-1400i
CH-2 MAIN AMP

SIZE D | SCALE: NONE | DWG. NO. 990-255-00 | REV. A

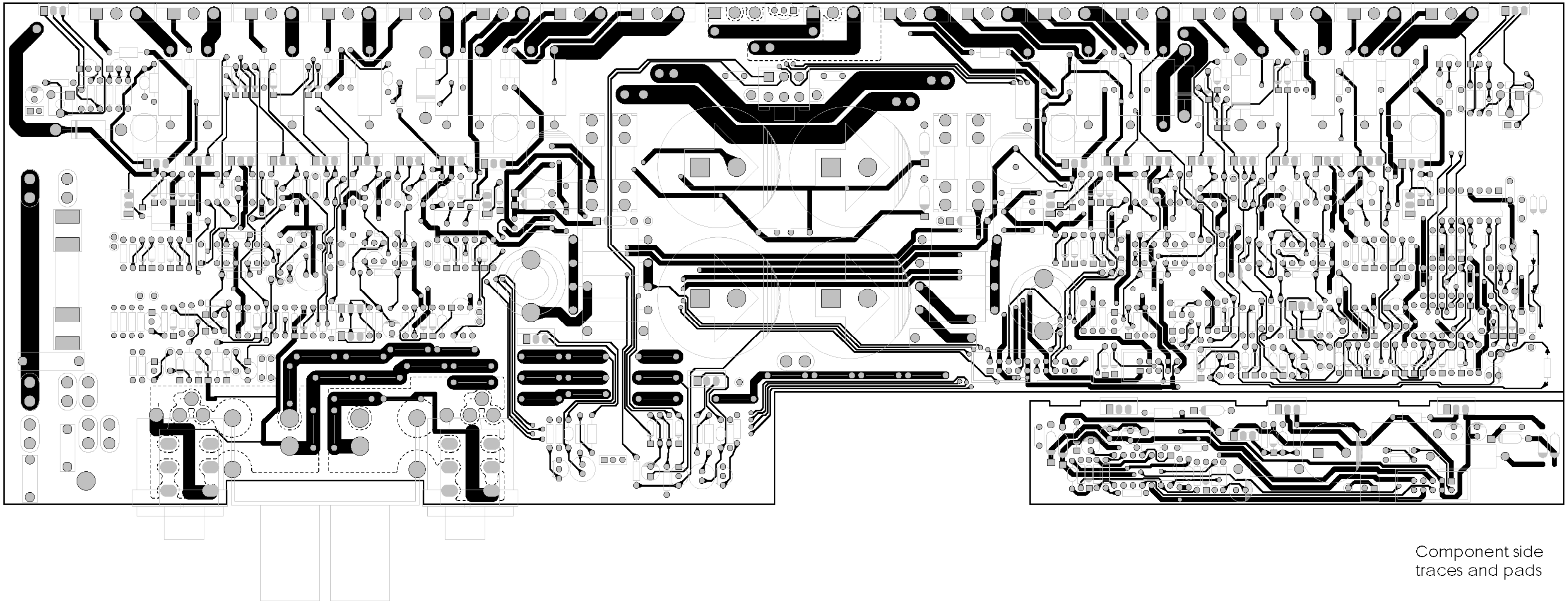
DWG FILE: | SHEET 2 OF 3


PRIMARY FUSE VALUES:
FOR 100VAC: 20A SB 250V (510-017-00)
FOR 120VAC: 20A SB 250V (510-017-00)
FOR 240VAC: 8A SB 250V (510-023-00)
FROM POWER CORD
J5 (BRN) (HOT)
J4 (BLU) (NEUTRAL)
J38 040-135-00 CABLE ASSY, 18AWG, GN/YW, 4" (TO SAFETY LUG)
PRODUCTION TEST JUMPER TEMP. SIM.
69-C
88-C
TEMP SENSOR MOUNTED TO MAIN HEATSINK
U1 LM35DZ
10mV/DEG C
T-SENS
OVERTEMP (MUTE AT 80 DEG C. UN-MUTE AT 55 DEG C.)
PROGRAM DETECTOR
PROG-DET
60 DEG C DETECTOR
60-C
TURN-ON DELAY MUTING (4 SEC)
AMPLIFIER TEST POINTS
TO INPUT BOARD
D20 1N4004
D26 1N4004
D1 SF304
D2 SF304A
MOUNTED TO MAIN SINK
D35 1N4004
D19 1N4004
C11 1000UF 25V
C14 1000UF 25V
+90V
+80V
-80V
-90V
+80V-(1)
+80V-(2)
-80V-(1)
-80V-(2)
J30 JUMPER
J26 TO INPUT BOARD (HIGH CURRENT SHUNT)
NOTE: C11, C12, C15, C16 ARE 10,000uF 80V (220-033-00) IN M-1400i 12,000uF 80V (220-035-00) IN M-1400
AMPLIFIER OUTPUT CONNECTORS (NOTE THAT SPEAKON'S [J42 & J46] ARE USED ON M-1400 AND 1/4" PHONE [J43 & J45 ON M-1400i)
DC-FAULT TEST JUMPERS
ADJUST 1KHz SIN INPUT FOR 10V AT BOTH AMPLIFIER OUTPUTS.
SHORT PIN 1 TO 2 AND VERIFY CHANNEL-1 "SHORT" LED FLICKERS.
SHORT PIN 2 TO 3 AND VERIFY CHANNEL-2 "SHORT" LED FLICKERS.
Q83 MAC224A4
Q88 MAC224A4
D93 MBS4992
D95 MBS4992
MUTE-(1)
MUTE-(2)
SUPPLY SUB-BOARD
MAIN BOARD
FAN VOLTAGES: FAST = 28V SLOW = 14V
Q91 2SD1264A ON SHROUD
Q89 2SB940A ON SHROUD
Q90 2SD1264A ON SHROUD
Q92 2SC3788
F-SENS
TO FAN (770-007-00) PANASONIC FBA08A24H1T
AMP-OUT(1)
AMP-OUT(2)
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING
APPROVALS DATE
MACKIE.
Mackie Designs Inc. Woodinville, Wa.
SCHEM, M-1400, M-1400i SUPPLY, HOUSEKEEPING AND I/O
SIZE D
SCALE: NONE
DWG. NO. 990-255-00
REV. A
SHEET 3 OF 3
DWG. NO. 990-255-00 SHT 3 REV: A

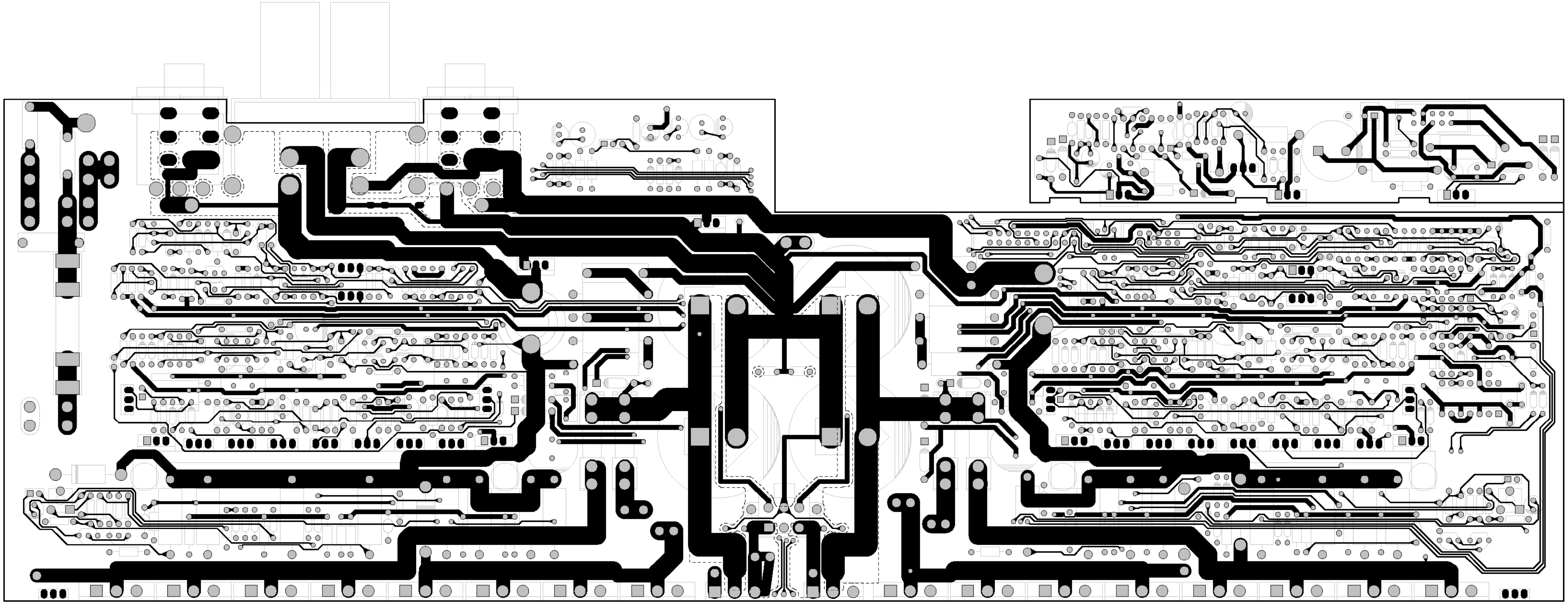

Z25
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
D1
U1
D2
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
J1
C1
C2
C12
C13
F1
F2
F3
F4
F5
L1
L2
Z101
Z102
Z103
J27
J28
J38
J39
J40
J41
J44
C76

Component side
traces and pads

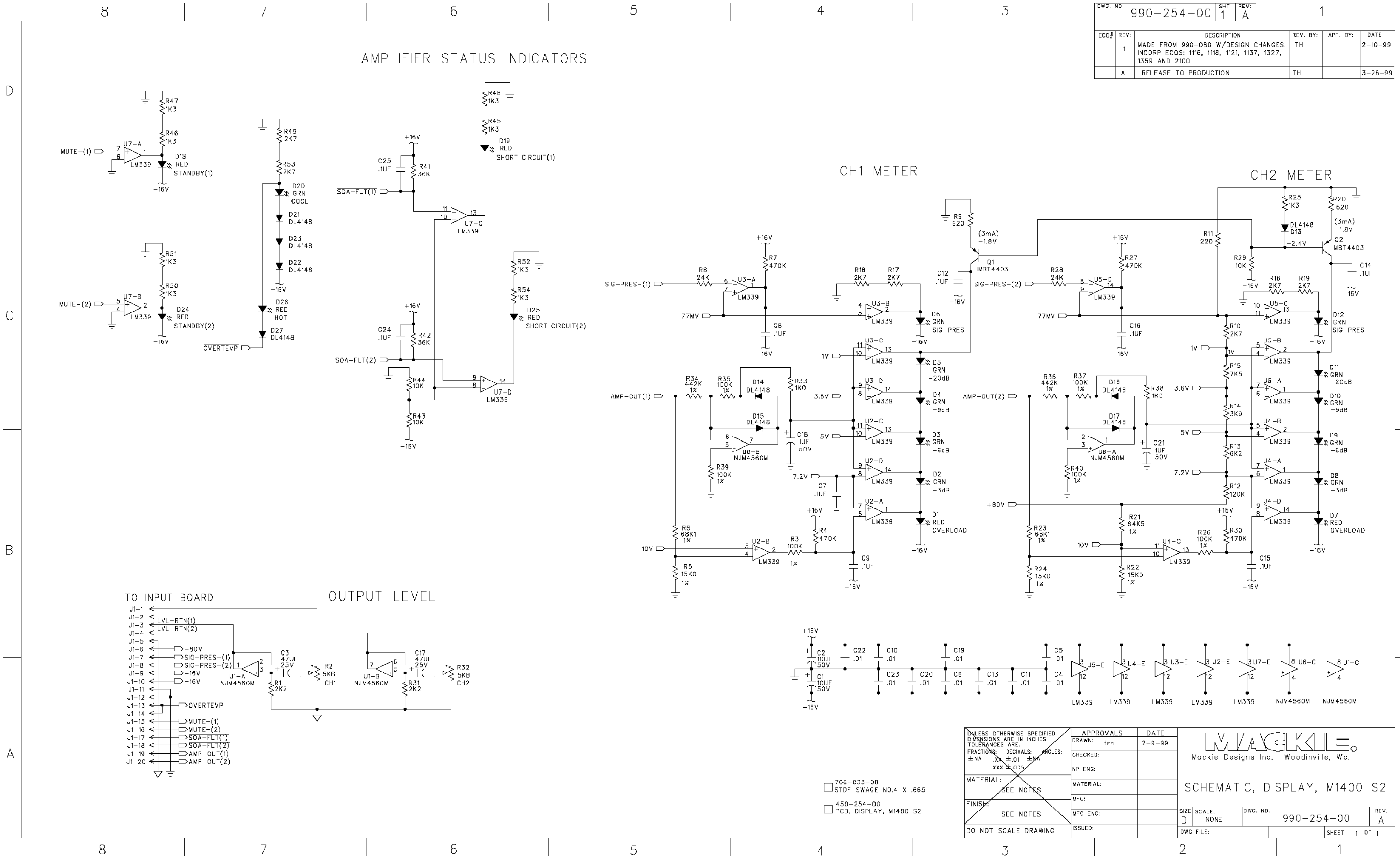
MACKIE.	M1400, M1400i series 2	©2000 All rights reserved, Mackie Designs Inc.	AMPLIFIER BOARD	255-4



Component side
traces and pads



Solder side
traces and pads


AMPLIFIER STATUS INDICATORS
CH1 METER
CH2 METER
OUTPUT LEVEL
TO INPUT BOARD
MUTE-(1)
MUTE-(2)
U7-A LM339
U7-B LM339
U7-C LM339
U7-D LM339
R47 1K3
R46 1K3
D18 RED STANDBY(1)
R51 1K3
R50 1K3
D24 RED STANDBY(2)
R49 2K7
R53 2K7
D20 GRN COOL
D21 DL4148
D23 DL4148
D22 DL4148
D26 RED HOT
D27 DL4148
OVERTEMP
SOA-FLT(1)
SOA-FLT(2)
C25 .1UF
R41 36K
C24 .1UF
R42 36K
R44 10K
R43 10K
R48 1K3
R45 1K3
D19 RED SHORT CIRCUIT(1)
R52 1K3
R54 1K3
D25 RED SHORT CIRCUIT(2)
+16V
-16V
SIG-PRES-(1)
SIG-PRES-(2)
77MV
R8 24K
R7 470K
U3-A LM339
U3-B LM339
U3-C LM339
U3-D LM339
C8 .1UF
R18 2K7
R17 2K7
D6 GRN SIG-PRES
R9 620
(3mA) -1.8V
Q1 IMBT4403
C12 .1UF
1V
3.8V
5V
7.2V
D5 GRN -20dB
D4 GRN -9dB
D3 GRN -6dB
D2 GRN -3dB
D1 RED OVERLOAD
U2-C LM339
U2-D LM339
U2-A LM339
U2-B LM339
AMP-OUT(1)
R34 442K 1%
R35 100K 1%
D14 DL4148
D15 DL4148
R33 1K0
U6-B NJM4560M
C18 1UF 50V
R39 100K 1%
C7 .1UF
R6 68K1 1%
R5 15K0 1%
10V
R3 100K 1%
R4 470K
C9 .1UF
R28 24K
R27 470K
U5-D LM339
U5-C LM339
U5-B LM339
U5-A LM339
U4-B LM339
U4-A LM339
U4-D LM339
U4-C LM339
C16 .1UF
R25 1K3
D13 DL4148
-2.4V
R20 620
(3mA) -1.8V
Q2 IMBT4403
R11 220
R29 10K
C14 .1UF
R16 2K7
R19 2K7
D12 GRN SIG-PRES
R10 2K7
R15 7K5
R14 3K9
R13 6K2
R12 120K
D11 GRN -20dB
D10 GRN -9dB
D9 GRN -6dB
D8 GRN -3dB
D7 RED OVERLOAD
AMP-OUT(2)
R36 442K 1%
R37 100K 1%
D16 DL4148
D17 DL4148
R38 1K0
U6-A NJM4560M
C21 1UF 50V
R40 100K 1%
+80V
R23 68K1 1%
R24 15K0 1%
R21 84K5 1%
R22 15K0 1%
R26 100K 1%
R30 470K
C15 .1UF
J1-1
J1-2
J1-3
J1-4
J1-5
J1-6
J1-7
J1-8
J1-9
J1-10
J1-11
J1-12
J1-13
J1-14
J1-15
J1-16
J1-17
J1-18
J1-19
J1-20
LVL-RTN(1)
LVL-RTN(2)
+80V
SIG-PRES-(1)
SIG-PRES-(2)
+16V
-16V
OVERTEMP
MUTE-(1)
MUTE-(2)
SOA-FLT(1)
SOA-FLT(2)
AMP-OUT(1)
AMP-OUT(2)
U1-A NJM4560M
C3 47UF 25V
R1 2K2
R2 5KB CH1
U1-B NJM4560M
C17 47UF 25V
R31 2K2
R32 5KB CH2
C2 10UF 50V
C1 10UF 50V
C22 .01
C23 .01
C10 .01
C20 .01
C19 .01
C6 .01
C13 .01
C11 .01
C5 .01
C4 .01
U5-E LM339
U4-E LM339
U3-E LM339
U2-E LM339
U7-E LM339
U6-C NJM4560M
U1-C NJM4560M
706-033-08 STDF SWAGE NO.4 X .665
450-254-00 PCB, DISPLAY, M1400 S2
8
7
6
5
4
3
2
1
D
C
B
A

DWG. NO.	SHT	REV:
990-254-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 990-080 W/DESIGN CHANGES. INCORP ECOS: 1116, 1118, 1121, 1137, 1327, 1359 AND 2100.	TH		2-10-99
	A	RELEASE TO PRODUCTION	TH		3-26-99

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE:
FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA

MATERIAL: SEE NOTES

FINISH: SEE NOTES

DO NOT SCALE DRAWING

APPROVALS	DATE
DRAWN: trh	2-9-99
CHECKED:	
NP ENG:	
MATERIAL:	
MFG:	
MFG ENG:	
ISSUED:	

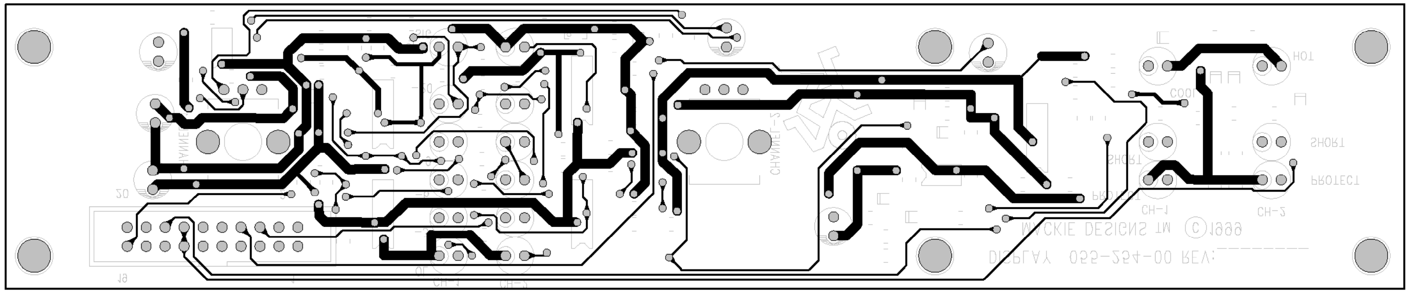
MACKIE.

Mackie Designs Inc. Woodinville, Wa.

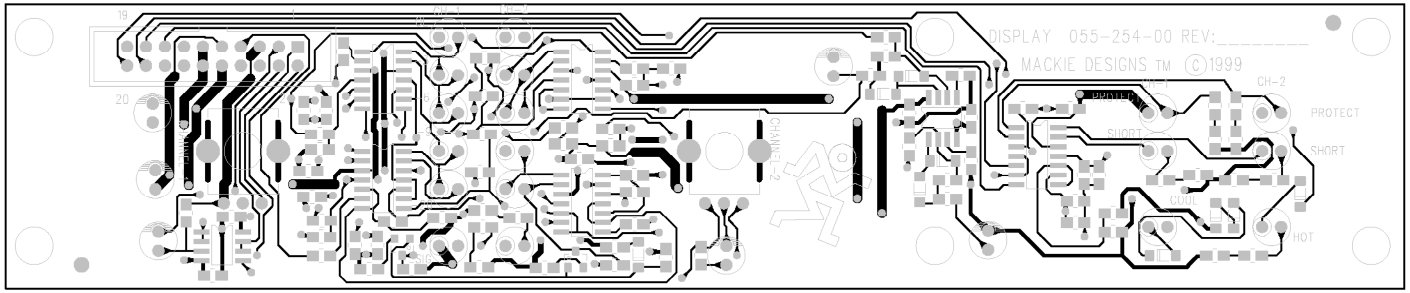
SCHEMATIC, DISPLAY, M1400 S2

SIZE	SCALE:	DWG. NO.	REV.
D	NONE	990-254-00	A

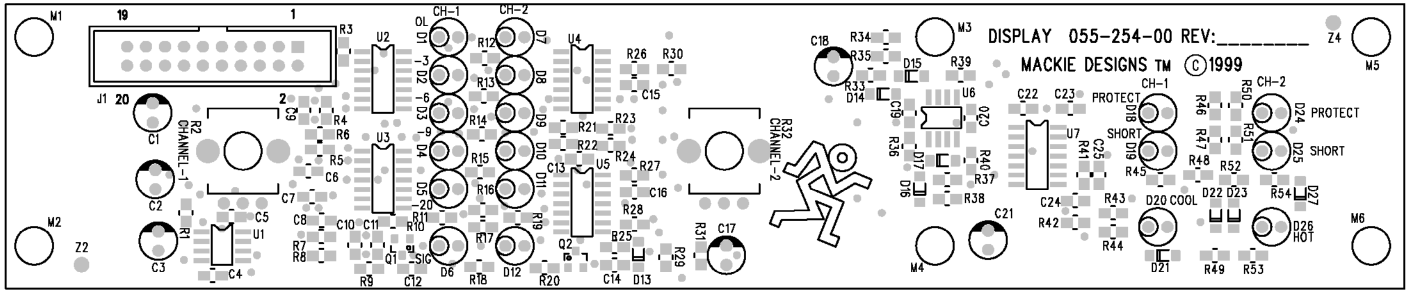
DWG FILE: SHEET 1 OF 1



Solder side traces and pads



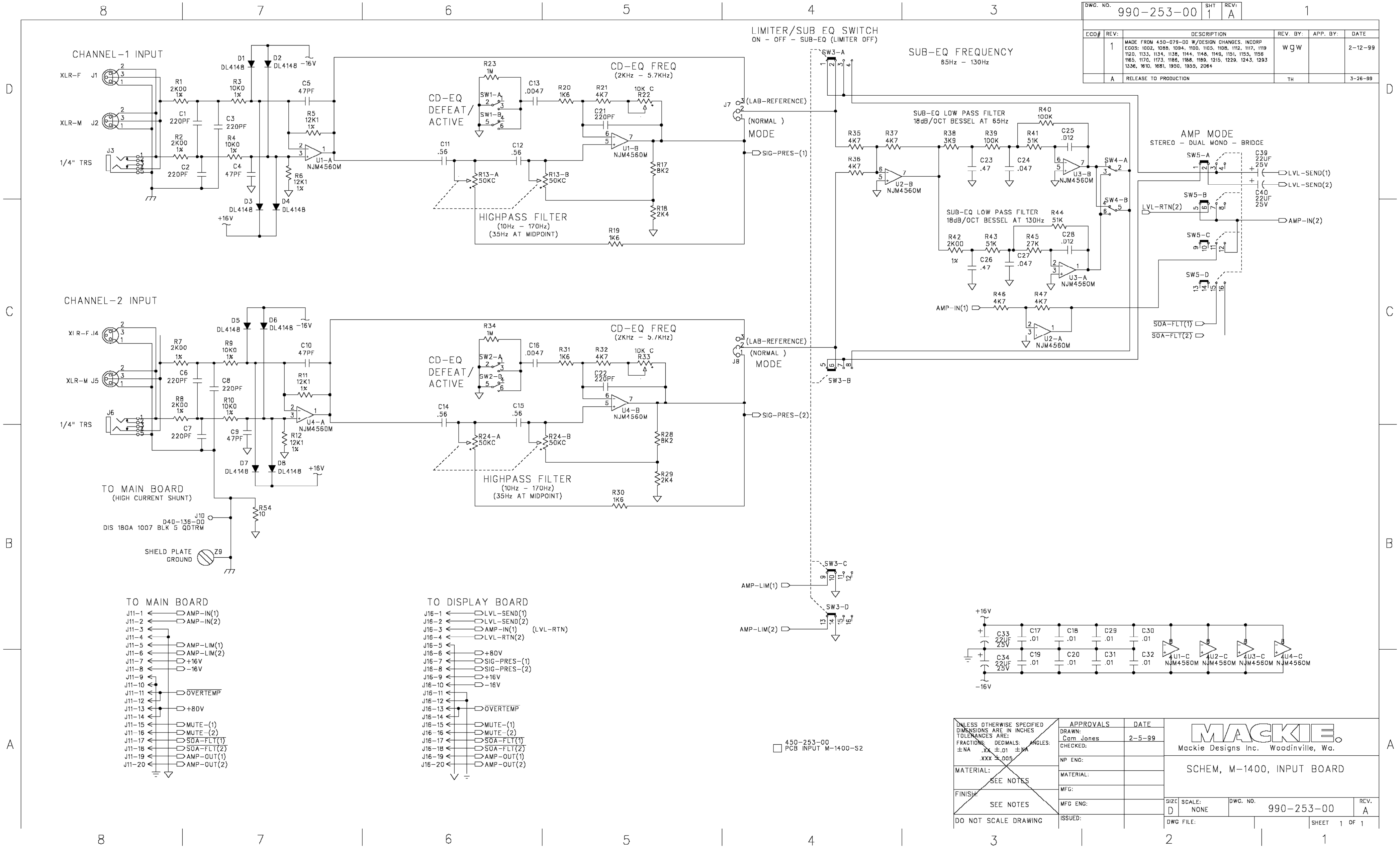
Component side traces and pads


DISPLAY 055-254-00 REV:________
MACKIE DESIGNS TM ©1999
CHANNEL-1
CHANNEL-2
CH-1
CH-2
OL
-3
-6
-9
-20
SIG
PROTECT
SHORT
COOL
HOT
J1
M1
M2
M3
M4
M5
M6
Z2
Z4

Component side

DWG. NO.	SHT	REV:
990-253-00	1	A

ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE
	1	MADE FROM 450-079-00 W/DESIGN CHANGES. INCORP ECOS: 1002, 1088, 1094, 1100, 1105, 1108, 1112, 1117, 1119 1120, 1133, 1134, 1138, 1144, 1148, 1149, 1151, 1155, 1156 1165, 1170, 1173, 1186, 1188, 1189, 1215, 1229, 1243, 1293 1336, 1610, 1681, 1950, 1955, 2064	wgw		2-12-99
	A	RELEASE TO PRODUCTION	TH		3-26-99

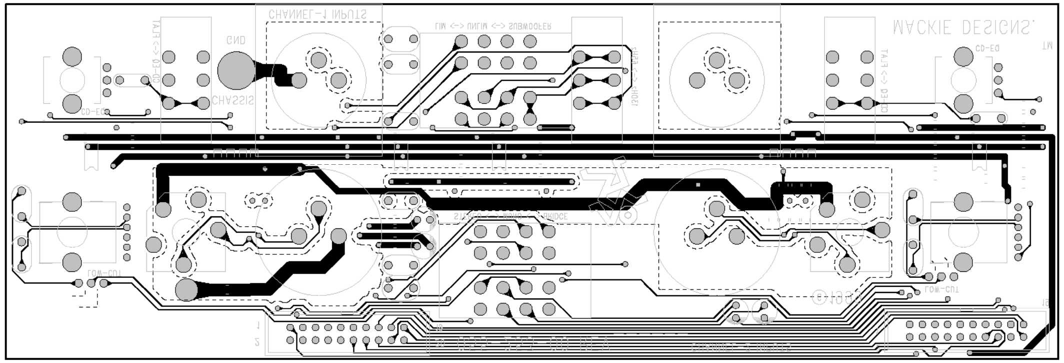

8
7
6
5
4
3
2
1
D
C
B
A
CHANNEL-1 INPUT
XLR-F J1
XLR-M J2
J3
1/4" TRS
R1 2K00 1%
C1 220PF
R2 2K00 1%
C2 220PF
R3 10K0 1%
C3 220PF
R4 10K0 1%
C4 47PF
D1 DL4148
D2 DL4148
D3 DL4148
D4 DL4148
-16V
+16V
C5 47PF
R5 12K1 1%
R6 12K1 1%
U1-A NJM4560M
CD-EQ DEFEAT/ ACTIVE
SW1-A
SW1-B
R23 1M
C13 .0047
R20 1K6
CD-EQ FREQ
(2KHz - 5.7KHz)
R21 4K7
R22 10K C
C21 220PF
U1-B NJM4560M
R17 8K2
R18 2K4
C11 .56
C12 .56
R13-A 50KC
R13-B 50KC
HIGHPASS FILTER
(10Hz - 170Hz)
(35Hz AT MIDPOINT)
R19 1K6
J7
(LAB-REFERENCE)
(NORMAL) MODE
SIG-PRES-(1)
LIMITER/SUB EQ SWITCH
ON - OFF - SUB-EQ (LIMITER OFF)
SW3-A
SUB-EQ FREQUENCY
65Hz - 130Hz
SUB-EQ LOW PASS FILTER
18dB/OCT BESSEL AT 65Hz
R35 4K7
R37 4K7
R38 3K9
R39 100K
R40 100K
R41 51K
C25 .012
R36 4K7
U2-B NJM4560M
C23 .47
C24 .047
U3-B NJM4560M
SW4-A
SW4-B
SUB-EQ LOW PASS FILTER
18dB/OCT BESSEL AT 130Hz
R44 51K
R42 2K00 1%
R43 51K
R45 27K
C28 .012
C26 .47
C27 .047
U3-A NJM4560M
AMP-IN(1)
R46 4K7
R47 4K7
U2-A NJM4560M
AMP MODE
STEREO - DUAL MONO - BRIDGE
SW5-A
SW5-B
SW5-C
SW5-D
C39 22UF 25V
C40 22UF 25V
LVL-SEND(1)
LVL-SEND(2)
LVL-RTN(2)
AMP-IN(2)
SOA-FLT(1)
SOA-FLT(2)
CHANNEL-2 INPUT
XLR-F J4
XLR-M J5
J6
1/4" TRS
R7 2K00 1%
C6 220PF
R8 2K00 1%
C7 220PF
R9 10K0 1%
C8 220PF
R10 10K0 1%
C9 47PF
D5 DL4148
D6 DL4148
D7 DL4148
D8 DL4148
C10 47PF
R11 12K1 1%
R12 12K1 1%
U4-A NJM4560M
SW2-A
SW2-B
R34 1M
C16 .0047
R31 1K6
R32 4K7
R33 10K C
C22 220PF
U4-B NJM4560M
R28 8K2
R29 2K4
C14 .56
C15 .56
R24-A 50KC
R24-B 50KC
R30 1K6
J8
SIG-PRES-(2)
SW3-B
TO MAIN BOARD
(HIGH CURRENT SHUNT)
J10
040-136-00
DIS 18GA 1007 BLK 5 QDTRM
R54 10
SHIELD PLATE GROUND
Z9
SW3-C
AMP-LIM(1)
SW3-D
AMP-LIM(2)
TO MAIN BOARD
J11-1 AMP-IN(1)
J11-2 AMP-IN(2)
J11-3
J11-4
J11-5 AMP-LIM(1)
J11-6 AMP-LIM(2)
J11-7 +16V
J11-8 -16V
J11-9
J11-10
J11-11 OVERTEMP
J11-12
J11-13 +80V
J11-14
J11-15 MUTE-(1)
J11-16 MUTE-(2)
J11-17 SOA-FLT(1)
J11-18 SOA-FLT(2)
J11-19 AMP-OUT(1)
J11-20 AMP-OUT(2)
TO DISPLAY BOARD
J16-1 LVL-SEND(1)
J16-2 LVL-SEND(2)
J16-3 AMP-IN(1) (LVL-RTN)
J16-4 LVL-RTN(2)
J16-5
J16-6 +80V
J16-7 SIG-PRES-(1)
J16-8 SIG-PRES-(2)
J16-9 +16V
J16-10 -16V
J16-11
J16-12
J16-13 OVERTEMP
J16-14
J16-15 MUTE-(1)
J16-16 MUTE-(2)
J16-17 SOA-FLT(1)
J16-18 SOA-FLT(2)
J16-19 AMP-OUT(1)
J16-20 AMP-OUT(2)
450-253-00
PCB INPUT M-1400-S2
+16V
-16V
C33 22UF 25V
C34 22UF 25V
C17 .01
C18 .01
C29 .01
C30 .01
C19 .01
C20 .01
C31 .01
C32 .01
U1-C NJM4560M
U2-C NJM4560M
U3-C NJM4560M
U4-C NJM4560M

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS: ±NA DECIMALS: .XX ±.01 .XXX ±.005 ANGLES: ±NA	APPROVALS	DATE
	DRAWN: Cam Jones	2-5-99
	CHECKED:	
MATERIAL: SEE NOTES	NP ENG:	
	MATERIAL:	
FINISH: SEE NOTES	MFG:	
	MFG ENG:	
DO NOT SCALE DRAWING	ISSUED:	

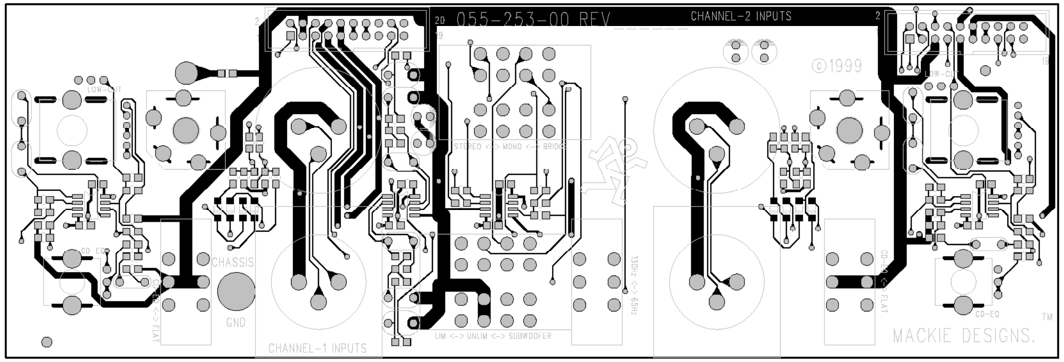
MACKIE.
Mackie Designs Inc. Woodinville, Wa.

SCHEM, M-1400, INPUT BOARD

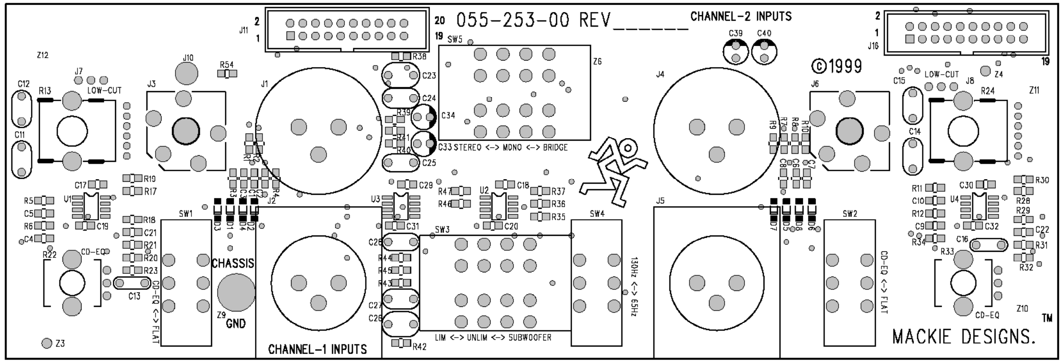
SIZE D
SCALE: NONE
DWG. NO. 990-253-00
REV. A
DWG FILE:
SHEET 1 OF 1


MACKIE DESIGNS.
CHANNEL-1 INPUTS
LIM <-> UNLIM <-> SUBWOOFER
GND
CHASSIS
LOW-CUT
CD-EQ
©1999

Solder side
traces and pads


055-253-00 REV
CHANNEL-2 INPUTS
©1999
STEREO <-> MONO <-> BRIDGE
LOW-CUT
CHASSIS
GND
CHANNEL-1 INPUTS
LIM <-> UNLIM <-> SUBWOOFER
120Hz <-> 65Hz
CD-EQ <-> FLAT
CD-EQ
MACKIE DESIGNS.

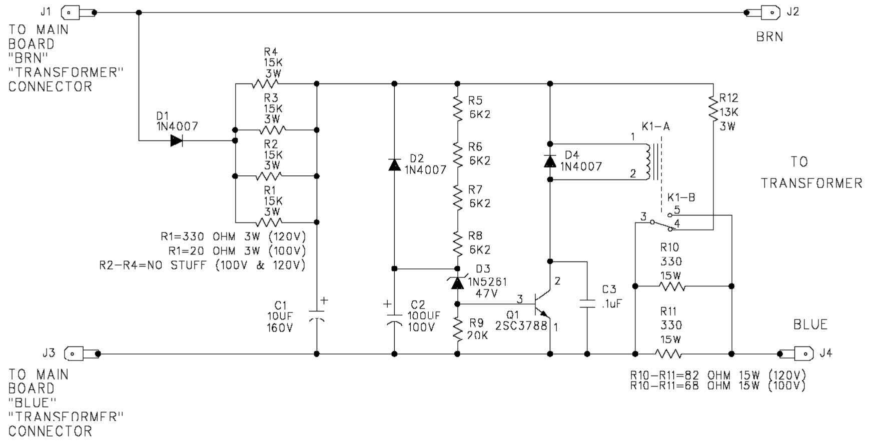
Component side
traces and pads


J11
20
19
055-253-00 REV______
CHANNEL-2 INPUTS
C39
C40
J16
SW5
Z6
Z12
J7
J10
R54
J3
J1
J4
J6
J8
Z11
©1999
LOW-CUT
C34
C33 STEREO <-> MONO <-> BRIDGE
U1
U2
U3
U4
SW1
SW2
SW3
SW4
J2
J5
CHASSIS
GND
Z9
Z3
Z10
CD-EQ
CD-EQ <-> FLAT
120Hz <-> 65Hz
LIM <-> UNLIM <-> SUBWOOFER
CHANNEL-1 INPUTS
MACKIE DESIGNS.
TM

Component side

DWG. NO.	SHT	REV:
990-162-00	1	A

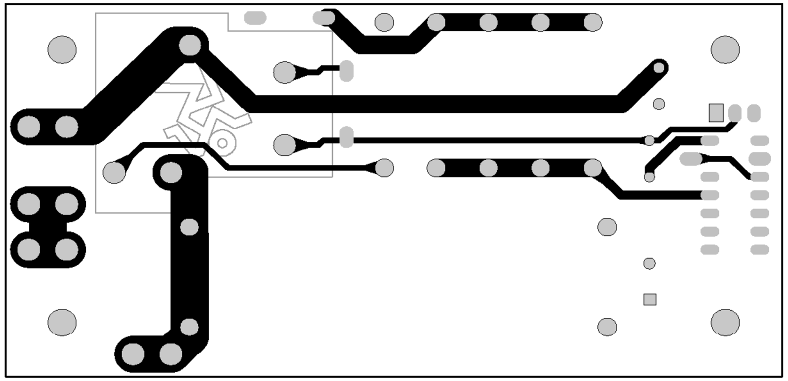
ECO#	REV:	DESCRIPTION	REV. BY:	APP. BY:	DATE

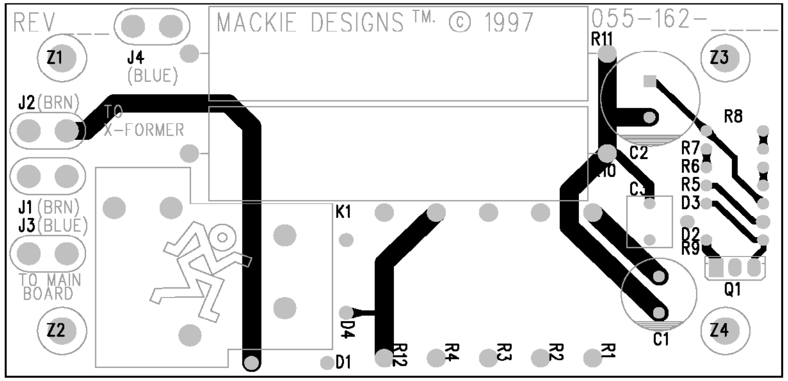

J1
TO MAIN BOARD "BRN" "TRANSFORMER" CONNECTOR
J2
BRN
D1 1N4007
R4 15K 3W
R3 15K 3W
R2 15K 3W
R1 15K 3W
R1=330 OHM 3W (120V)
R1=20 OHM 3W (100V)
R2-R4=NO STUFF (100V & 120V)
C1 10UF 160V
D2 1N4007
C2 100UF 100V
R5 6K2
R6 6K2
R7 6K2
R8 6K2
D3 1N5261 47V
R9 20K
Q1 2SC3788
3
2
1
D4 1N4007
C3 .1uF
K1-A
1
2
K1-B
3
4
5
R12 13K 3W
TO TRANSFORMER
R10 330 15W
R11 330 15W
BLUE
J4
R10-R11=82 OHM 15W (120V)
R10-R11=68 OHM 15W (100V)
J3
TO MAIN BOARD "BLUE" "TRANSFORMER" CONNECTOR

NOTE: SCHEMATIC IS SHOWN WITH 240VAC VALUES

- ☐ **NO STUFF R2-R4 FOR 100VAC OR 120VAC VERSIONS**
  XXX
- ☐ **REPLACES R10-R11 FOR 120VAC VERSION**
  82 15W
- ☐ **REPLACES R1 FOR 120VAC VERSION**
  330 3W
- ☐ **REPLACES R10-R11 FOR 100VAC VERSION**
  68 15W
- ☐ **REPLACES R1 FOR 100VAC VERSION**
  20 3W
- ☐ PCB, M-1200/M-1400 SOFT START

Solder side




REV___
MACKIE DESIGNS TM. © 1997
055-162-___
Z1
J4 (BLUE)
R11
Z3
R8
J2 (BRN)
TO X-FORMER
R7
R6
R5
D3
C2
C3
R10
J1 (BRN)
J3 (BLUE)
K1
D2
R9
TO MAIN BOARD
Q1
Z2
D4
D1
R12
R4
R3
R2
R1
C1
Z4

Component side

UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE IN INCHES
TOLERANCES ARE:
FRACTIONS: ±NA
DECIMALS: .XX ±.01 .XXX ±.005
ANGLES: ±NA
MATERIAL: SEE NOTES
FINISH: SEE NOTES
DO NOT SCALE DRAWING

APPROVALS		DATE
DRAWN:	Chuck J	4-15-97
CHECKED:		
NP ENG:	Cameron Jones	4-25-97
MATERIAL:		
MFG:		
MFG ENG:		
ISSUED:		

Mackie Designs Inc. Woodinville, Wa.

SCHEMATIC,
M1400
SOFT START

SIZE D
SCALE: NONE
DWG. NO. 990-162-00
REV. A
DWG FILE:
SHEET 1 OF 1

PARTS LIST

Parts Numbering guide

040-	Cables
055-	Finished PCB Assy
100-	Pots and resistors
200-	Capacitors
300-	Semiconductors
400-	Jacks/Connectors
500-	Switches
510-	Fuses
550-	Chassis Metalwork
600-	Transformers
601-	Inductors
610-	Wires and Cables
640-	AC line cords
700-	Hardware
760-	Knobs/Plastic
770-	Fans
790-	Misc./Packing
800-	Printed Material
860-	EPROM

PART#	DESCRIPTION	PAGES
090-137-XX	M1400 assembly	A-2
080-149-00	Heatsink subassembly	A-3
090-134-00	M1400i assembly	A-4
080-143-00	Heatsink subassembly	A-5
055-253-00	Input board	A-6
055-254-00	Display board	A-7
055-255-00	Amplifier board	A-8
055-162-00	Soft Start board	A-11

⚠ Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.

Master Parts List 090-137-XX M1400 series II

Part #	Description	Rev	Qty	
090-137-00	M1400 SERIES II 120V	A6 A2	1	
090-137-01	M1400 SERIES II 230V	A6 A2	1	
090-137-02	M1400 SERIES II 100V	A6 A2	1	
⚠ 040-359-00	RIB 28GA 20C 4.25IN PLZD	C	1	
⚠ 040-360-00	RIB 28GA 20C 18IN PLZD	C	1	
⚠ 055-162-01	PCB ASSY SOFT START 240V	A1	1	FOR 240VAC VERSION. SEE PAGE 11
⚠ 055-162-02	PCB ASSY SOFT START 100V	A1	1	FOR 100VAC VERSION. SEE PAGE 11
⚠ 055-253-00-01	PCB ASSY INPUT	A2 A2	1	SEE PAGE 6
⚠ 055-254-00-01	PCB ASSY DISPLAY	A2 A2	1	SEE PAGE 7
⚠ 080-035-00	PWR SW HARNESS - AMP	A	1	
⚠ 080-149-00	SA HTSK M1400 SERIES II	A6 A2	1	
⚠ 080-154-00	SA XFMR 120V 1400/1400 I	A1 A1	1	FOR 120VACVERSION
⚠ 080-154-01	SA XFMR 230V 1400/1400 I	A1 A1	1	FOR 230VACVERSION
⚠ 080-154-02	SA XFMR 100V 1400/1400 I	A1 A1	1	FOR 100VACVERSION
⚠ 500-022-00	SWITCH, ROCKER ILLUMINATED	A	1	
⚠ 510-017-00	FUSE SB 20A 3AB 1/4X1-1/4	A	1	FOR 120VAC AND 100VAC VERSIONS
⚠ 510-023-00	FUSE SB 8A 3AB 1/4X1-1/4	A	1	FOR 230VACVERSION
550-247-00	SHIELD INPUT - M1200	A	1	
550-249-00	PLATE XFMR .335IDX4.528OD	A	AR	
550-294-00	BRACKET FOR SOFT START	A	1	FOR 230VAC AND 100VAC VERSIONS
550-470-00	PNT CHASSIS M1400-PRO	A	1	
550-564-00	PNT TOP COVER M1400-I-PRO	A	1	
550-566-00	PNT SIDE RIGHT M1400-I-PR	A	1	
550-568-00	PNT LEFT SIDE M1400-I-PRO	A	1	
551-029-10	EXTR SCRN DSPLY BZL-M1400	D	1	
⚠ 640-006-00	LC 15A 125V SJT 14GA 6FT7	D	1	LINECORD FOR 120VACVERSION
⚠ 640-007-02	LC EXPORT - JAPANESE	D	1	LINECORD FOR 100VACVERSION
⚠ 640-007-01	LC EXPORT - EUROPEAN	D	1	LINECORD FOR 230VACVERSION
700-011-00	MCH 4-40X1/4 BTNSKT BLKOX	A	6	
700-028-01	SEMS 6-32X5/16 PHP BLKZC	B	36	
700-041-04	MCH 6-32X3/8 FL 100DG BLK	A	8	
700-050-04	MCH 6-32X3/8 FIL PHL CLR	A	2	
700-085-03	SCR PHP M3X6 STL BLK ZC	A	4	
700-086-00	TF 6-32X3/8 FL 100DG BLK	A	3	
700-106-00	BOLT HEX 5/16X23/4 ZC GD5	A	1	
701-016-00	5-20X5/16 PHPII TYP B BLK	A	8	
701-022-01	#4X5/16 PHP II TYP B BLK	B	4	
705-001-00	KEPNUT 6-32	A	2	
705-019-00	NUT STOVER LOCK 5/16X18	A	1	
710-002-00	WASHER-SPLD W/400-214-00	A	AR	
710-024-00	WASH FLAT 5/16 HARD (USS)	A	2	
730-016-00	LOCTITE 242	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
740-001-00	TYRAP 3-1/4L	A	2	
740-003-00	TYRAP 8IN BLK	A	2	
740-004-00	STRAIN RELIEF HEYCO 1244	A	1	
760-048-04	KNOB 9MM DARK GRAY	B	4	
760-061-00	KNOB VOLUME AMPS	A	2	
780-042-00	INSUL MYLAR INPUT SHIELD	A	1	
780-111-00	WASH RUB (W/TRANSFORMER)	A	2	
790-002-00	BAG POLY 12 X 18 2MIL	A	1	
790-022-00	POLY-SHEET 52CF X 26 4MIL	A	1	
800-160-00	BOX M1400 SER II	A	1	
800-161-00	M1400 BOX SLEEVE SER II	A	1	
810-056-00	INST TOP/BOTTOM - AMP		2	
820-062-11	OWN MNL M1400	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Heatsink sub assy 080-149-00

Part #	Description	Rev	Qty	
080-149-00	SA HTSK M1400 SERIES II	A6 A2	1	
040-209-00	RIB 28GA 10C 11.5 PLZD	C	1	
⚠ 055-255-01-01	PCB ASSY MAIN M1400	A6 A2	1	SEE PAGE 8. THIS HAS SPEAKON OUTPUTS
⚠ 220-059-00	LYT 12000UF 20% 82V 35X60	A	4	NOTE THAT THIS IS 12,000 UF
400-083-00	2P .100X1 22GA END	B	1	
⚠ 410-003-00	INSL SILPAD K6 W/ADHESIVE	A	8.2	
⚠ 410-006-00	INSL SILPAD W/O ADHESIVE	B	1	
550-237-00	SPRING CLIP SUBSINK-M1200	A	2	
550-255-00	PIGGYBACK CLIP	A1	1	
550-467-00	BRKT SUBSINK M1400 PRO	A	2	
550-468-00	COWLING HTSINK M1400 PRO	A	1	
550-469-00	BRKT FAN M1400 PRO	A	1	
551-085-00	EXTR FAB HEATSINK M1400PR	A	1	
700-010-00	TF 6-32X1/4 PHP BLKZC	A	3	
700-010-04	TF 6-32X3/8 PHP BLKZC	A	8	
700-028-02	SEMS 6-32X3/8 PHP BLKZC	B	10	
700-087-00	TF 4-40X5/8 TORX 1/4 WASH	A	5	
700-088-00	TF 4-40X5/8 TORX 3/8 WASH	A	18	
700-122-00	SS-8-32X1/4 PHP PH BLK OX		4	
705-024-00	NUT 8-32 SMALL DIA	A	4	
710-013-00	WASH FLAT NO.6 FIBRE	A	4	
730-001-00	THERMAL JOINT COMPOUND	A	AR	
730-003-00	ADHESIVE INDSTRL 3M 4799	A	AR	
730-025-00	LOCTITE 222	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
⚠ 770-007-00	FAN 80MM 24VDC-PANASONIC	B	1	
780-136-00	FOAM INSL FAN M1400 II	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Master Parts List 090-134-00 M1400i series II, 120v

Part #	Description	Rev	Qty	
090-134-00	M1400-I SERIES II 120V	A6 A2	1	
⚠ 040-359-00	RIB 28GA 20C 4.25IN PLZD	C	1	
⚠ 040-360-00	RIB 28GA 20C 18IN PLZD	C	1	
⚠ 055-253-00-01	PCB ASSY INPUT	A2 A2	1	SEE PAGE 6
⚠ 055-254-00-01	PCB ASSY DISPLAY	A2 A2	1	SEE PAGE 7
⚠ 080-035-00	PWR SW HARNESS	A	1	
⚠ 080-143-00	SA HTSK M1400-I SERIES II	A6 A2	1	SEE PAGE 5
⚠ 080-154-00	SA XFMR 120V 1400/1400 I	A1 A1	1	
⚠ 500-022-00	SWITCH, ROCKER ILLUMINATED	A	1	
⚠ 510-017-00	FUSE SB 20A 3AB 1/4X1-1/4	A	1	
550-247-00	SHIELD INPUT - M1200	A	1	
550-249-00	PLATE XFMR .335IDX4.528OD	A	AR	
550-564-00	PNT TOP COVER M1400-I-PRO	A	1	
550-565-00	PNT CHASSIS M1400-I-PRO	A	1	
550-566-00	PNT SIDE RIGHT M1400-I-PR	A	1	
550-568-00	PNT LEFT SIDE M1400-I-PRO	A	1	
551-029-20	EXTR SCRN DSPL BZL M1400I	D	1	
⚠ 640-006-00	LC 15A 125V SJT 14GA 6FT7	D	1	LINECORD
700-011-00	MCH 4-40X1/4 BTNSKT BLKOX	A	6	
700-028-01	SEMS 6-32X5/16 PHP BLKZC	B	36	
700-041-04	MCH 6-32X3/8 FL 100DG BLK	A	7	
700-050-04	MCH 6-32X3/8 FIL PHL CLR	A	2	
700-085-03	SCR PHP M3X6 STL BLK ZC	A	4	
700-086-00	TF 6-32X3/8 FL 100DG BLK	A	3	
700-106-00	BOLT HEX 5/16X23/4 ZC GD5	A	1	
701-016-00	5-20X5/16 PHPII TYP B BLK	A	8	
705-001-00	KEPNUT 6-32	A	2	
705-003-00	NUT HEX-SPLD W/400-214-00	A	AR	
705-015-00	NUT SLOT NCKL	A	2	
705-019-00	NUT STOVER LOCK 5/16X18	A	1	
710-002-00	WASHER-SPLD W/400-214-00	A	AR	
710-019-00	WASH FIBRE BLK	A	2	
710-024-00	WASH FLAT 5/16 HARD (USS)	A	2	
730-016-00	LOCTITE 242	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
740-001-00	TYRAP 3-1/4L	A	2	
740-003-00	TYRAP 8IN BLK	A	2	
740-004-00	STRAIN RELIEF HEYCO 1244	A	1	
750-001-00	BUMPON ROUND BLK .63X.31	A	4	
760-048-04	KNOB 9MM DARK GRAY	B	4	
760-061-00	KNOB VOLUME AMPS	A	2	
780-042-00	INSUL MYLAR INPUT SHIELD	A	1	
780-111-00	WASH RUB (W/TRANSFORMER)	A	2	
790-002-00	BAG POLY 12 X 18 2MIL	A	1	
790-022-00	POLY-SHEET 52CF X 26 4MIL	A	1	
800-158-00	BOX M1400-I SERIES II	A	1	
800-159-00	M1400I BOX SLEEVE SER II	A	1	
810-056-00	INST TOP/BOTTOM - AMP		2	
820-062-14	OWN MANUAL M1400I ENGDOM	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Heatsink sub assy 080-143-00

Part #	Description	Rev	Qty	
080-143-00	SA HTSK M1400-I SERIES II	A6 A2	1	
040-209-00	RIB 28GA 10C 11.5 PLZD	C	1	
⚠ 055-255-02-01	PCB ASSY MAIN M1400-I	A6 A2	1	SEE PAGE 8. THIS HAS 1/4" OUTPUTS
⚠ 220-058-00	LYT 10000UF 20% 82V 35X60	A	4	NOTE THAT THIS IS 10,000 UF
400-083-00	2P .100X1 22GA END	B	1	
⚠ 410-003-00	INSL SILPAD K6 W/ADHESIVE	A	8.2	
⚠ 410-006-00	INSL SILPAD W/O ADHESIVE	B	1	
550-237-00	SPRING CLIP SUBSINK-M1200	A	2	
550-255-00	PIGGYBACK CLIP	A1	1	
550-467-00	BRKT SUBSINK M1400 PRO	A	2	
550-468-00	COWLING HTSINK M1400 PRO	A	1	
550-469-00	BRKT FAN M1400 PRO	A	1	
551-085-00	EXTR FAB HEATSINK M1400PR	A	1	
700-010-00	TF 6-32X1/4 PHP BLKZC	A	3	
700-010-04	TF 6-32X3/8 PHP BLKZC	A	8	
700-028-02	SEMS 6-32X3/8 PHP BLKZC	B	10	
700-087-00	TF 4-40X5/8 TORX 1/4 WASH	A	5	
700-088-00	TF 4-40X5/8 TORX 3/8 WASH	A	18	
700-122-00	SS-8-32X1/4 PHP PH BLK OX		4	
705-024-00	NUT 8-32 SMALL DIA	A	4	
710-013-00	WASH FLAT NO.6 FIBRE	A	4	
730-001-00	THERMAL JOINT COMPOUND	A	AR	
730-003-00	ADHESIVE INDSTRL 3M 4799	A	AR	
730-025-00	LOCTITE 222	A	AR	
730-026-00	ADHESIVE RTV162	A	AR	
⚠ 770-007-00	FAN 80MM 24VDC-PANASONIC	B	1	
780-136-00	FOAM INSL FAN M1400 II	A	1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

055-253-00 Rev A Input board

Part #	Description	Value		Reference
040-136-00	DIS 18GA 1007 BLK 5 QDTRM			J10
130-037-02	RESISTOR POT 9MM HORIZ	10K C		R22 R33
130-062-02	POT 50KC 12MM DUAL WO SLV	50KC		R13 R24
140-025-00	RESISTOR CF	10	5%	R54
140-078-00	RES TF SM .1W 5% 1K6 OHM	1K6	5%	R19-20 R30-31
140-082-00	RES TF SM .1W 5% 2K4 OHM	2K4	5%	R18 R29
140-087-00	RESISTOR CF	3K9	5%	R38
140-089-00	RESISTOR CF	4K7	5%	R21 R32 R35-37 R46-47
140-095-00	RES TF SM .1W 5% 8K2 OHM	8K2	5%	R17 R28
140-108-00	RESISTOR CF	27K	5%	R45
140-115-00	RESISTOR CF	51K	5%	R41 R43-44
140-123-00	RESISTOR CF	100K	5%	R39-40
140-147-00	RESISTOR CF	1M	5%	R23 R34
145-318-00	RES MF SM .1W 1% 2K00 OHM	2K00	1%	R1-2 R7-8 R42
145-389-00	RESISTOR MF	10K0	1%	R3-4 R9-10
145-397-00	RESISTOR MF	12K1	1%	R5-6 R11-12
200-001-02	CAPACITOR MYLAR T&R	0.012		C25 C28
200-004-02	CAPACITOR MYLAR T&R	0.047	10%	C24 C27
200-015-02	CAPACITOR MYLAR T&R	0.0047		C13 C16
200-022-02	CAPACITOR MYLAR TAPE	0.47	10%	C23 C26
200-025-02	CAPACITOR MYLAR T&R	0.56		C11-12 C14-15
212-001-00	CAPACITOR CERAMIC SMT	0.01	10%	C17-20 C29-32
212-004-00	CAPACITOR CERAMIC SMT	220PF	5%	C1-3 C6-8 C21-22
212-009-00	CAPACITOR CERAMIC SMT	47PF	5%	C4-5 C9-10
220-001-02	LYT 22UF 20% 25V RAD TR	22UF	10%	C33-34 C39-40
300-003-00	DIODE SIGNAL SMD	DL4148		D1-8
320-012-00	OPAMP NJM4560M	NJM4560M		U1-4
400-041-00	XLR VERT MALE PCMNT			J2 J5
400-214-00	JACK 1/4 V PCMNT 1MM WASH			J3 J6
400-223-00	XLR PCMNT NEUTRIK-AP SER FEMALE			J1 J4
400-341-20	HDR 20P .10X2 STR LCK			J11 J16
450-253-00	PCB INPUT M-1400-S2			Z3
500-023-00	SWITCH	4P3T		SW3 SW5
500-024-00	SWITCH SLIDE VERT PC MTG	DPDT		SW1-2 SW4

Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.

055-254-00 Rev A Display board

Part #	Description	Value		Reference
130-070-00	POT RTY 5K LIN 9MM 21DET	5KB	20%	R2 R32
140-057-00	RESISTOR CF	220	5%	R11
140-068-00	RES TF SM .1W 5% 620 OHM	620	5%	R9 R20
140-073-00	RES TF SM .1W 5% 1K0 OHM	1K0	5%	R33 R38
140-076-00	RESISTOR CF	1K3	5%	R25 R45-48 R50-52 R54
140-081-00	RESISTOR CF	2K2	5%	R1 R31
140-083-00	RES TF SM .1W 5% 2K7 OHM	2K7	5%	R10 R16-19 R49 R53
140-087-00	RESISTOR CF	3K9	5%	R14
140-092-00	RESISTOR CF	6K2	5%	R13
140-094-00	RESISTOR CF	7K5	5%	R15
140-097-00	RESISTOR CF	10K	5%	R29 R43-44
140-106-00	RESISTOR CF	24K	5%	R8 R28
140-111-00	RESISTOR CF	36K	5%	R41-42
140-124-00	RESISTOR CF	120K	5%	R12
140-139-00	RESISTOR CF	470K	5%	R4 R7 R27 R30
145-406-00	RESISTOR MF	15K0	1%	R5 R22 R24
145-469-00	RESISTOR MF	68K1	1%	R6 R23
145-478-00	RESISTOR MF	84K5	1%	R21
145-485-00	RESISTOR MF	100K	1%	R3 R26 R35 R37 R39-40
145-547-00	RESISTOR MF	442K	1%	R34 R36
212-001-00	CAPACITOR CERAMIC SMT	0.01	10%	C4-6 C10-11 C13 C19-20 C22-23
212-010-00	CAPACITOR CERAMIC SMT	.1UF	-400	C7-9 C12 C14-16 C24-25
220-002-02	CAPACITOR LYTIC RADIAL TAPE	47UF	10%	C3 C17
220-008-02	LYT 1UF 20% 50V RAD TR	1UF	10%	C18 C21
220-027-02	CAPACITOR LYTIC RADIAL	10UF	10%	C1-2
300-003-00	DIODE SIGNAL SMD	DL4148		D13-17 D21-23 D27
⚠ 304-070-02	LED RED T1 W/.550 SPCR T/	R	RED	D1 D7 D18-19 D24-26
⚠ 304-071-02	LED GRN T1 W/.550 SPCR T/	R	GRN	D2-6 D8-12 D20
311-002-00	X-SISTOR PNP SMD	IMBT4403		Q1-2
320-012-00	OPAMP NJM4560M	NJM4560M		U1 U6
323-002-00	I.C. QUAD COMPARATOR SMD	LM339		U2-5 U7
400-077-00	HDR 20P .1X2 STR LCK SHRD			J1
450-254-00	PCB, DISPLAY, M1400 S2			Z10
706-033-08	STDF SWAGE NO.4 X .665			M1-6

⚠ Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.

255a

055-255-xx Rev A Amplifier board

Part #	Description	Value		Reference
040-135-00	CABLE ASSY, 18AWG, GN/YW, 4"			J38
100-001-00	RESISTOR CF	10	5%	R57 R72 R75 R89
100-017-00	RESISTOR CF	47	5%	R60 R69 R78 R86 R208 R213
100-023-00	RESISTOR CF	82	5%	R58 R61 R67 R70 R76 R79 R84 R87
100-027-00	RESISTOR CF	120	5%	R113
100-030-00	RESISTOR CF	160	5%	R97-100 R122 R134-136
100-031-00	RESISTOR CF	180	5%	R106 R116 R124 R132
100-040-00	RES CF .125W 5% 430 OHM	430	5%	R28 R37 R65 R83 R187
100-042-00	RES CF .125W 5% 510 OHM	510	5%	R23 R29 R33 R36 R229
100-049-00	RES CF .125W 5% 1K OHM	1K	5%	R209 R212
100-050-00	RESISTOR CF	1K1	5%	R143
100-051-00	RES CF .125W 5% 1K2 OHM	1.2K	5%	R64 R82
100-056-00	RESISTOR CF	2K	5%	R146 R157 R168 R171 R180
100-061-00	RESISTOR CF	3K3	5%	R142 R193-194 R214-215
100-071-00	RESISTOR CF	8K2	5%	R144
100-072-00	RESISTOR CF	9.1K	5%	R158
100-073-00	RESISTOR CF	10K	5%	R26 R30 R32 R35 R114 R127 R147-148 R155 R163-164 R167 R173 R176 R184 R190 R211 R220 R222-223 R227 R230-233
100-076-00	RES CF .125W 5% 13K OHM	13K	5%	R221
100-080-00	RESISTOR CF	20K	5%	R110 R152 R160 R169-170 R235
100-082-00	RESISTOR CF	24K	5%	R156
100-083-00	RESISTOR CF	27K	5%	R181
100-084-00	RESISTOR CF	30K	5%	R63 R66 R81 R90
100-086-00	RESISTOR CF	36K	5%	R112 R145 R159 R178 R197-198 R226
100-089-00	RES CF .125W 5% 47K OHM	47K	5%	R3-4 R31 R34 R108
100-092-00	RESISTOR CF	62K	5%	R139 R199-200 R203
100-093-00	RESISTOR CF	68K	5%	R140
100-094-00	RESISTOR CF	75K	5%	R234
100-097-00	RESISTOR CF	100K	5%	R111 R151 R153 R161-162 R172 R174-175 R183 R185-186 R210
100-109-00	RESISTOR CF	1M	5%	R109
100-110-00	RESISTOR CF	360K	5%	R195-196 R228
100-111-00	RESISTOR CF	390K	5%	R141
105-277-00	RESISTOR MF	750	1%	R120 R129
105-331-00	RESISTOR MF	2K49	1%	R56 R59 R62 R68 R71 R74 R77 R80 R85 R88 R105 R107 R115 R117 R119 R123 R125 R128 R131 R133 R154 R165-166 R177
110-065-00	RES CF .25W 5% 4K7 OHM	4K7	5%	R216-219
115-427-00	RESISTOR CF	24K9	1%	R118 R121 R126 R130
121-097-00	RESISTOR MOF	10K	5%	R225
123-009-00	RESISTOR MOF	0.22	5%	R38-49 R51-54
123-033-00	RESISTOR MOF	2.2	5%	R101-104 R137-138
123-056-00	RESISTOR MOF	20	5%	R149-150
123-071-00	RESISTOR MOF	82	5%	R207
123-109-00	RESISTOR MOF	3.3K	5%	R206 R224
130-038-00	RESISTOR POT TRIM HORIZ	500-B		R24 R27
⚠ 150-009-00	RESISTOR, FUSABLE, 1/4W	2.2	5%	R1-2 R5-7 R9-12 R14-18 R20-22 R50 R92 R94
⚠ 150-025-00	RES FUS .25W 5% 10 OHM	10	5%	R204-205
⚠ 150-037-00	RESISTOR, FUSABLE, 1/4W	33	5%	R13 R25 R55 R73 R91 R93 R95-96
⚠ 150-045-00	RESISTOR, FUSABLE, 1/4W	68	5%	R8 R19
⚠ 150-066-00	RESISTOR, FUSABLE, 1/4W	510	5%	R179 R182 R188-189
⚠ 150-080-00	RESISTOR, FUSABLE, 1/4W	2K	5%	R191-192 R201-202
200-007-02	CAPACITOR MYLAR T&R	0.01		C1-2 C29-30 C66 C73

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

Part #	Description	Value	Reference
200-023-00	CAPACITOR, POLY BOX	1000pF 20%	C77 C84
200-024-00	CAPACITOR, POLY BOX	.01uF 20%	C49 C53-54
200-036-00	CAPACITOR, METALIZED POLY	.1uF 10%	C19 C26-28
200-044-02	PLY FILM 270PF 5% 630V TR	270pF 5%	C21-23 C25
210-001-02	CAPACITOR CERAMIC TAPE	0.01 10%	C8-9 C15-17 C24 C51-52 C56-63
210-010-02	CAPACITOR, CERAMIC, T/R	47pF 5%/NPO	C37 C40
210-017-02	CAPACITOR, CERAMIC, T/R	470pF 5%/Y5E	C32 C34 C36 C38-39 C41
211-003-00	CAPACITOR CERAMIC AXIAL	0.001 10%	C6 C10 C18 C20
211-009-00	CAPACITOR CERAMIC AXIAL	0.1 10%	C3-4 C48 C64 C71-72 C75 C81-82
220-002-02	CAPACITOR LYTIC RADIAL TAPE	47UF 10%	C74
220-004-02	CAPACITOR LYTIC RADIAL TAPE	470UF 10%	C42-43
220-011-02	CAPACITOR LYTIC RADIAL T&R	100UF 10%	C83
220-016-00	LYT 1000UF 20% 25V RAD	1000UF 10%	C11 C14
220-025-00	CAPACITOR LYTIC RADIAL	1,000UF 10%	C76
220-027-02	CAPACITOR LYTIC RADIAL TAPE	10UF 10%	C5 C7 C31 C33 C35 C44 C47 C50 C55 C65 C67-70
220-034-00	CAPACITOR LYTIC RADIAL	0.47UF 20%	C79
220-049-02	LYT 100UF 10V 20% RAD BIP	100uF 20%	C78 C80
300-001-00	DIODE SIGNAL	1N4148	D3-12 D16-17 D21-23 D25 D27-29 D32 D39-58 D61-69 D74-84 D87 D90 D92-93 D98-99
300-007-00	DIODE SIGNAL, 220V, LOW CAPACITANCE	1SS244	D24 D30-31 D33 D37-38 D59-60 D70-73 D85-86 D89
301-007-00	DIODE, POWER, DUAL, COMMON CATHODE	SF304 200V	D1
301-008-00	DIODE, POWER, DUAL, COMMON ANODE	SF304A 200V	D2
301-009-00	DIODE POWER	1N4004	D19-20 D26 D34-36 D95-96
301-010-00	DIODE POWER	1N5404	D13-15 D18
⚠ 301-017-00	THY MBS4992	MBS4992	Q93 Q95
⚠ 301-026-00	TRIAC 200V 40A	MAC224A4	Q83 Q88
302-003-00	DIODE ZENER	1N4745	D88 D91 D94 D97
310-002-00	TRANSISTOR PNP	2N4403	Q19 Q22 Q70 Q72-76 Q84 Q87
310-007-00	TRANSISTOR NPN	2N4401	Q20-21 Q78 Q80 Q85-86 Q94
310-023-02	TRANSISTOR NPN T&R	2SC2362K	Q43-44 Q47-48 Q53-54 Q57-58 Q61-62 Q65-66 Q77 Q79
310-028-00	TRANSISTOR PNP	2SB940A	Q89
310-029-00	TRANSISTOR NPN	2SD1264A	Q90-91
310-032-02	TRANSISTOR PNP T&R	2SA1016K	Q41-42 Q45-46 Q55-56 Q59-60 Q63-64 Q67-68
310-033-00	TRANSISTOR PNP	MJL21193	Q6-9 Q14-17
310-034-00	TRANSISTOR NPN	MJL21194	Q2-5 Q10-13
310-035-00	TRANSISTOR PNP	2SA1478	Q25-26 Q30 Q34-35 Q39 Q69 Q71 Q81-82
310-036-00	TRANSISTOR NPN	2SC3788	Q24 Q28-29 Q33 Q37-38 Q92
310-037-00	XSTR NPN MJE340 POWER	MJE340	Q50 Q52
310-038-00	XSTR PNP MJE350	MJE350	Q49 Q51
310-042-00	TRANSISTOR NPN	MJE15032	Q23 Q32
310-043-00	TRANSISTOR PNP	MJE15033	Q31 Q40
310-049-00	XSTR PNP 2SA794A	2SA794A	Q1 Q18
310-050-00	XSTR NPN 2SC1567A	2SC1567A	Q27 Q36
323-001-00	I.C. QUAD COMTR THRU HOLE	LM339	U2 U5-6
⚠ 329-012-00	OPTO-ISOLATOR,LED/CDS	VTL5C10	U3-4
⚠ 329-014-00	IC, DEG C TEMPERATURE SENSOR	LM35DZ	U1
⚠ 400-060-00	FUSE CLIP PC MT 5mm DIA		Z1-7 Z9
400-061-00	CONNECTOR HDR STR 2P .100 X 1		J41
⚠ 400-129-00	FUSE CLIP PC MT .25" DIA		Z8 Z10

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.

..amplifier continued

Part #	Description	Value		Reference	
400-133-00	HEADER, 2X3, MATE-N-LOCK	11A	600V	J1	
400-143-00	CONN, HDR, 3-PIN, UN-SHROUDED, 0 .100			J20 J37	
400-166-00	CONNECTOR JACK 1/4" TRS HORIZ, PC MNT			J43 J45	(M-1400i ONLY)
400-171-00	CONN, HDR, 2-PIN, UN-SHROUDED,0 .100			J2-3	
400-173-00	CONN QUICK DISC .250 W/STABLE-LOK TABS			J4-5 J26 J31-36	
400-237-00	BANANA QUAD HORIZ PCMT			J44	
400-341-10	HDR 10P .10X2 STR LCK			J28 J39	
400-341-20	HDR 20P .10X2 STR LCK			J27	
400-353-00	SPEAKONS HORIZ 4 CKT NLM4MD-H-2-NG			J42 J46	(M-1400 ONLY)
⚠ 450-255-00	PCB, MAIN M-1400-S2			Z77	
⚠ 510-021-00	FUSE 5X20	F-10A		F2-5	
⚠ 601-006-00	INDUCTOR, AIR CORE	1uH	10%	L1-2	
660-005-00	Jumper, Uninsulated, 22AWG, 0.400"		ZERO	W1-28	

⚠ Components noted with this symbol shall be replaced only by the component specified.
This is required to maintain product safety.

055-162-xx Rev A Soft Start board

Part #	Description	Value			Reference	
⚠ 055-162-01	PCB ASSY SOFT START 240V	A1			FOR 240VAC	
⚠ 055-162-02	PCB ASSY SOFT START 100V	A1			FOR 100VAC	
100-068-00	RESISTOR CF	6K2	.125W	5%	R5-8	
100-080-00	RESISTOR CF	20K	.125W	5%	R9	
123-124-00	RESISTOR MOF	13K	3W	5%	R12	
123-125-00	RESISTOR MOF	15K	3W	5%	R1-4	FOR 240VAC VERSION
123-056-00	RESISTOR MOF	20	3W	5%	R1	FOR 100VAC VERSION
123-085-00	RESISTOR MOF	330	3W	5%	R1	FOR 120VAC VERSION
NOTE: R2-R4 NOT USED IN 100VAC OR 120VAC VERSIONS)						
125-019-00	RESISTOR WW	68	15W	5%	R10-11	FOR 100VAC VERSION
125-020-00	RESISTOR WW	82	15W	5%	R10-11	FOR 120VAC VERSION
125-021-00	RESISTOR WW	330	15W	5%	R10-11	FOR 240VAC VERSION
200-036-00	CAPACITOR, METALIZED POLY	.1uF	250V	10%	C3	
220-007-00	CAPACITOR LYTIC RADIAL	100UF	100V	10%	C2	
220-040-00	CAPACITOR LYTIC RADIAL	10UF	160V	20%	C1	
⚠ 301-014-00	DIODE POWER	1N4007	1000V		D1-2 D4	
⚠ 302-001-00	DIODE ZENER	1N5261	47V		D3	
⚠ 310-036-00	TRANSISTOR NPN	2SC3788			Q1	
400-059-00	CONN QUICK DISC 250				J1-4	
⚠ 450-162-00	PCB, M-1200/M-1400 SOFT START				Z12	
⚠ 501-002-00	RELAY SPDT 20AMP 110VDC				K1	

⚠ Components noted with this symbol shall be replaced only by the component specified. This is required to maintain product safety.